(With FULL MODEL SOLUTIONS for the LAST 5 YEARS, including one of Examination)

The
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Edited by JOSEPH HUGHES.

'Knowledge is proud that he has learned so much,
Wisdom is humble that he knows no more.'—COWPER.

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FRIEDRICH FRÖBEL,
THE GREAT REFORMER OF EDUCATION.

BY EMILY A. E. SHIRREFF,
President of the Fröbel Society.

II.

My last paper on the life of Fröbel brought us to the beginning of his practical work as a teacher, when, in 1816, he quitted his Government post in Berlin and founded a school, first at Griesheim, and afterwards at Keilhau.

At first, as new pupils were added to the little group of nephews with which he began, he was full of hope, and thought he saw immediate success within his reach. His mind, never of a practical cast, was not one to measure material difficulties; but they were immense, and had to be met. The roughest installation was beyond the united means of himself and his friends, and for long they could not secure possession of the ground on which the school was built. But it is probable that, so long as Fröbel could dwell in thought upon a possibly near realisation of his great schemes for the new education of mankind, he was little troubled by mere worldly matters, and it was fortunate that his associates were more alive to such considerations.

One important step he did take, however, towards a proper installation, which was to bring home a wife to complete and direct their domestic affairs. This lady, whose name was Henrietta Wilhelmine Hoffmeister, had been married before, and separated from her husband on account of his misconduct. Fröbel relates his marriage in the following terms: *'In September, 1818, I brought to the household, now so rich with children and brothers, its *housewife*, in the person of a lady whom a like love of nature and of childhood with my own, and a like high and earnest conception of education, as the preparation for a life worthy of man, had drawn towards me. She was accompanied by a young girl whom she had some time before adopted as a daughter, and who now came with her to assist her in the duties of the household.'

In 1820 help came through the arrival of another brother with 'all his possessions' to throw in his lot with the association, his two sons being already under Fröbel's care. In 1822 the school-house was finished, and it was hoped that smooth times would follow. But a house is not all that a family requires, even with the addition of the most philosophical education, and the latter could do nothing to soften the hearts of the tradesmen of Keilhau clamouring for payment of their bills. Many painful years did the little community toil on, struggling manfully with their difficulties, at times held up by the hope of external help from men of high position, and always full of faith in the ultimate triumph of the true cause.

Barop, another of the comrades of 1813, did not fear to throw in his lot with them. His father had money but would risk none in such an enterprise; but he himself, like Middendorff, married a niece of Fröbel's, and clung to him henceforth through evil report and good report. He has himself expressed in the following words the conviction that impelled him then to brave the opposition of his family: 'The idea for which we live seems to me to be in harmony with the spirit of the age, and also of deep importance in itself; and I have no doubt but that men will come to believe in us because of our right understanding of this idea, in the same way that we ourselves believe in the invisible.' 'As a matter of fact,' he continues, 'none of us have ever swerved one instant from the fullest belief in our educational mission, and the most critical dilemma in the times we have passed through has never revealed one single wavering soul in this little valley.'

So little was Fröbel himself mentally disturbed by outward difficulties that it was during this very period, that, besides many smaller works, pamphlets, etc., he wrote his 'Education of Man,' an epoch-making book, little as it was noticed at the time, and imperfectly as it has, even yet, been recognised. Unfortunately, his own faulty style, and the frequent mysticism of his thoughts, which he would not pause to set forth clearly, contributed to rob the book of its due reward. At the darkest moment light seemed to dawn with the hope of interesting the Duke of Meiningen in a project for founding a great German Educational Institute; but the Duke, though personally much interested, was surrounded by ignorant counsellors,

* Letter to Krause published in same Vol. with the autibiography. See p. 123.

BRITISH MUSEUM

and the hope failed. After this Fröbel went, in 1831, to Frankfort, where he had left kind friends years before, and there once more he found sympathy and help; not indeed for Keilhau, as he so ardently desired, but to enable him to spread his views and make them known beyond Germany as the groundwork of a universal reform.

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They went to Berlin, where her mother lived, and there Fröbel's activity was almost entirely turned in a direction towards which he had been tending more and more for some years, namely, to the development of his plans for infant education. The whole experience of his life as a teacher had made him realise at every step that neglect in the early years of childhood of anything like systematic development of natural faculty was an insuperable obstacle to such culture of the whole nature as alone to him deserved the name of education. From this moment his principal energies were directed to perfecting the system of infant training that he had devised, to bringing it into public notice, and, beyond all, to appealing to mothers, to women generally, to undertake this unique mission, trusted by Heaven to their care.

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own record of their companionship, but want of space forbids. One little episode only I will note, as affording a charming glimpse of this unique village life. Various friends united to get up a *Spiel-fest*, which was held in 1850, in the park of the old castle of Altenstein.

'More than 300 children,' she says, 'from four neighbouring villages were assembled. There were flowers, garlands, songs, all appropriate and symbolical expressions of harmony and joy, such as Fröbel loved. The many young women trained by him as teachers accompanied the children, and Kindergarten games and dances, in all of which Fröbel and Middendorff joined unweariedly, were carried on through several happy hours to the delight of the little ones and also of a large assembly of spectators. Among the latter was the Duchess Ida, who sent refreshments for the children.'

Ten peaceful years passed away amid congenial, hopeful toil—ten years, crowned by his second marriage, in 1851, with a lady who had long been a friend and earnest sympathiser. All promised well, when the despotic Government of Prussia dealt him, in the autumn of 1851, a crushing blow by prohibiting the establishment of any Kindergarten on Prussian territory. Some have thought that the bitter disappointment caused by this senseless edict seriously affected his health; certain it is that he did not long survive it.

One moment only of compensation he had in the first public recognition of his claims by his scholastic brethren. He was invited in the winter of 1851 to attend the meeting of German Schoolmasters at Gotha, and as we learn from a letter of his wife to Baroness Von Mahrenholtz, when he entered the hall, though a speaker was addressing the audience, all present rose to their feet to receive him. It was the last of his few moments of outward triumph. He lived to celebrate his 70th birthday in April, 1852, and shortly after, the mind still so active, the heart as full of tender affection and of glorious aspiration for the good of his race as in the fairest days of youth, were stilled by the hand of Death.

He had prepared the ground, he sowed the seed, and then his hand was withdrawn. Scanty was the crop and tardy its growth, but it shall yet cover the civilised world with its fruits. And more and more as men learn to root education in philosophical principles and the truth of nature, the more they will realise that the full fruition of human faculty depends on the full development of childhood; and they will look back with reverent gratitude, and bless the name of Fröbel.

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TEACHERS' DRAWING LESSONS.

MODEL DRAWING FOR STANDARD V.

BY E. BUFFERY RIDGE,
Art Master under the London School Board.

PART I.—RECTANGULAR FIGURES.

IN Model Drawing an object must be represented exactly as it is seen. Such a representation may be obtained mechanically by tracing the form of the object on a pane of glass placed between the eye and the object, but the plane of the glass must be at right angles to the line of sight, and the line of sight must be directed at the centre of the object, or group of objects.

In Perspective this condition is satisfied only when the centre of the drawing coincides with the centre of vision. In no other circumstances are perspective drawings to be depended on as guides to correct Model Drawing. A knowledge of Solid Geometry is of greater service.

LESSON I.—VERTICAL SURFACES.

Hold a square map in front of the class. It looks square; the width is equal to the height. Turn it edgeways; the width has disappeared, but not the height. Hold it at an angle to the class; the height is still the same, but the width is not equal to it. Revolve the map until all the class realise that the more it slants away sideways the narrower it looks, while the height remains the same because the map does *not* slant away upwards. Hang the map high up on the wall in such a position that all the scholars see it at an angle. If Fig. 1 be taken to represent a plan

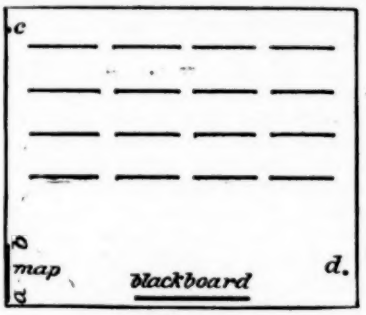


Fig. 1.

of the room the end wall at *a b* would be a good place. Let the blackboard in front of the class and the pieces of paper used by the scholars be, as far as possible, similar in shape and position. Draw on blackboard the line A B (Fig. 2), to represent the side of the map

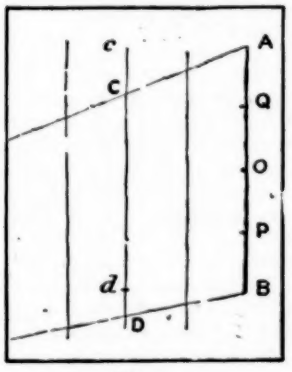


Fig. 2.

nearest the class—in this case the right-hand side. The line may be copied by the pupils. *It must be upright;* the length regulated by the size of the papers, leaving about the same proportionate space above A and below B as on the blackboard.

What part of the Height is equal to the Width?—Place one child at *c*, another at *d* (Fig. 1). Let each pupil turn partly round, so as to sit looking straight at the map. Then with one eye shut, holding the pencil upright in the right hand so as to cover the right-hand

edge of the map, bring the top of the pencil to coincide with the top corner, and slide the thumb up till it agrees with the bottom corner. The length of pencil above the thumb is a measurement of the height of the right-hand side of the map, but is not to be used as the length of the drawing. Practise this until it is seen that every pupil shows about the same length of pencil.

Measure the height again and hold it tight. Turn the hand till the pencil goes across the map horizontally, with the thumb against the right-hand side. How much of the piece of pencil does it take to reach across to the left-hand side?

Which scholars say half?	Those in the middle of the class.
More than half?	Those nearest *d*.
Less than half?	Those nearest *c*.
What does *c* say?	No width at all, or very little.
What does *d* say?	Width equal to the height.

It is not to be expected that correct results will be obtained at the first attempt, or without some little trouble in correcting and explaining; the pencil must be kept at right angles to the line of sight, being turned round as the hands of a clock turn, not pointing away from the scholar in imitation of the slanting face of the map. When this very general tendency is overcome, the use of the pencil for measuring will present no further difficulty.

Second Trial.—Hold the pencil *across* the map and move the thumb until the piece of pencil beyond it measures the width straight across from side to side. Turn the pencil upright so that the thumb touches the bottom corner, and see how far up the side of the map the width measurement reaches.

More definite answers may now be expected—a quarter, half, three-quarters, or a little more or less—and each child must keep in mind the result of the measurement.

Divide AB on the blackboard into halves and quarters, O, P, Q, and show that if the width is to be a quarter, the left-hand side of the map must be drawn as far away from AB, as P is from B; if half was measured, the width will be equal to OB; if three-quarters, to QB, etc. Let each child mark the width measured by itself in the same manner, and draw there an indefinite line, which may reach from top to bottom of the paper, but which ***must be upright.***

In conclusion point out how the apparent width increases from nothing seen at C to the full measurement at D, and examine papers to see that each is approximately correct.

Lesson II.

Principle learnt last lesson:—That things seen at an angle measure less across the way that they slant.

Practice learnt last lesson:—To measure with the pencil.

The map has four sides, two of which have been drawn. They are the upright sides, and are represented by upright lines. *Upright lines are always drawn upright.*

The top and bottom are level or horizontal lines. Will they appear horizontal?

Let the class turn to face the map as before, and hold their drawing books or sheets of paper by the two top corners, one in each hand, the paper hanging upright from the thumbs and fingers at the corners and being kept straight by a gentle pull. It must be held with both arms stretched straight out and kept at a level. If the map could look at one of the class it would see Fig. 3.

Fig. 3.

When the arms are lifted till the paper touches the lowest corner of the map the pupil holding it will see Fig. 4.

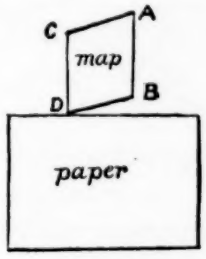


Fig. 4.

Does the top of the paper agree with the bottom of the map? If not, it shows that although they both are level in reality they do not both appear level. Lift the paper higher till it touches the top corner C, Fig. 4. Where is the other top corner (A)? Above the paper (which must still be kept horizontal), therefore above C, therefore CA the top of the map looks like a slanting line. So also does DB, and they must be drawn as they appear, not level but slanting. Draw attention to the space seen between the top edge of the paper and the bottom or top of the map. It is a corner or angle. Try both top and bottom again to see if both angles are the same, and if not, which is the greater. The majority of the class will answer correctly, 'The top.' Then the top must be more slanting than the bottom. This must be understood, but not yet used for the drawing. How much are the lines inclined? Refer to the drawings on papers and blackboard, and mark *d*, Fig. 2, the position of the corner D if the bottom appeared to be horizontal. But it is not to be so drawn—D must be lower—how much lower? As much as the top edge of the paper appeared to be below B. Look again; it is a small distance, not half, nor a quarter as much as from top to bottom of the map in most cases, therefore not as much as PB. Let each scholar mark a point D below *d*, according to his own observation, and draw BD, continuing the line to the edge of the paper. Now BD should slant just enough to look like the bottom of the map. Examine papers and correct where necessary; then obtain the top corner C in like manner—it would be at *c* if the top appeared horizontal. Instead of being on a level with A, it is below it, at C. *c* C is greater than *d*D, because the top slants more than the bottom. Draw AC to the edge of the paper. Now AB and CD are the sides of the map, AC is the top, and BD the bottom.

What can be seen?

To be copied by the Class

1. The map looks narrower than it is. (Learnt in Lesson 1.)
2. The upright CD is *shorter* than the upright AB. Why? *Because it is farther away.*
3. The horizontal lines at top and bottom *slant down* because they are seen at an angle and *looked up to.*
4. The top being the highest, and most *looked up to, slants down* the most.
5. *If AC and BD were long enough they would meet together.*

Mark over the four sides of the map plainly without rubbing out any of the other lines, marks, or letters.

The author will be glad to help or advise teachers who may meet with difficulties in this branch of their work.

Communications, with stamped addressed envelope for reply, should be sent to the office of THE PRACTICAL TEACHER.

(To be continued.)

WELL-KNOWN TEACHERS AT WORK.

IX.—MR. WILLIAM CHADWICK,

Lancasterian School, Wakefield.

In that suburb of Wakefield which is called 'St. John's,' after the old parish church, and which has now grown to be the west-end of the city, surrounded by handsome modern villas in leafy gardens, stands an unassuming brick building which forms a striking contrast, in its modest aspect and look of age, to the imposing new structures that have sprung up around it. A stone tablet on its front announces it as the 'Lancasterian School, founded 1812,' and thus we recognise it as one of the earliest issues of that new movement of Elementary Education which was happily destined to reach such an extensive development, and to become so important a factor in the life of our land. The head-master, Mr. W. Chadwick, welcomes us genially when he learns our errand, and introduces us at once into the large room of the school, where some hundred and fifty rosy-cheeked Yorkshire lads are at work, one class receiving an oral lesson, the rest engaged quietly in practical arithmetic, drawing, or writing. We are struck by the little disturbance created by our entry. A few pairs of curious eyes glance in our direction, then the heads are bent over the work again, and no further attention is paid to our presence. To our remark upon this Mr. Chadwick answers, 'Where several classes work together in one room each scholar must have eyes and ears only for his own work. It is perhaps one advantage of what in other respects is an undesirable necessity, that the habit of working together, inasmuch as it makes great calls on the attention, increases the power of concentration.'

'But you have other rooms?' we interposed.

'Yes. This is the parent-stock. Long ago this room had to be enlarged to provide space for the increased numbers, and further demands were met by the addition of two large class-rooms. At present that constitutes all our available space in the Boys' Department. Now we are feeling the pressure again; but we no longer stand in the midst of fields, as we once did, and the solution is not so simple as formerly.'

'You speak as if you had witnessed a long development of the school, Mr. Chadwick. How far back does your activity here date?'

'I came here in 1857. The school, as you may have noticed, had already existed since 1812, but of late years had deteriorated very much, the number of scholars had gradually dwindled away to nothing, and the school was closed. In 1856 it was taken in hand by a new board of managers of various shades of religious and political opinion, but who were united in the liberal resolve to maintain the school in the future what it had been in the past—a refuge for unsectarian elementary education. The constitution of the committee has changed with the years, and now only two of the original members remain, but the same breadth of view, and the same liberal interpretation of the functions of managers has perpetuated itself uninterruptedly. The principle of unsectarian education has been maintained, the teachers have been left entirely unhampered in their work, and such of the managers whose engagements allowed them to be frequent visitors to the school have always made themselves welcome to the teachers, and even to the scholars, as personal friends. The continual progress of the school from its small beginnings is very largely due to their well-directed interest in its welfare, and generous confidence in the teachers, which has not only rendered their work more effective, but also less harassing to themselves.'

Here Mr. Chadwick was called away by one of the thousand and one matters which are always claiming a head-master's attention, and we profited by the few minutes of his absence to view the room. Amongst the customary array of school material, the varied assortment of maps and charts, geographical, physiological, and botanical, which clothed the walls, we noticed a series of portraits, which we learned were those of former managers of the schools. It the most prominent place hung a large glass case filled with specimens of neat boyish handwriting, which, as we learned from the certificate itself beneath, had gained first-class honours at the Wakefield Exhibition of 1865, an exhibition instituted for educational purposes, and which in its consequences exercised an important influence on the educational development of the city. Another certificate showed that the school had contributed towards the fund raised for the relief of the sick and wounded during the Franco-Prussian War, and over against this hung a printed copy of the reports of Her Majesty's Inspectors from 1863 to 1874, reports which the school had every reason to exhibit thus in the place of honour. We complimented Mr. Chadwick, upon his return, on this unbroken series of excellent reports.

'That was before the days of the Merit Grant, Mr. Chadwick; but in the face of these reports it will probably not be very risky to ask your position with regard to that institution.'

'That is a dangerous question,' said Mr. Chadwick, smiling. 'I have never been a friend of a system which allows inspectors to establish such sharp distinctions between schools. The line between Good

and Excellent, and between Fair and Good, seems to me to be so fine that injustice must often result from the attempt to draw it even by the most conscientious of inspectors. I may say, however, that my school has as yet always been classed as excellent.'

'You have had a lengthy experience of Codes, Mr. Chadwick. What do you think of the latest as compared with others?'

'Generally speaking, I am of opinion that honest, steady work will make itself felt against most unfavourable influences of Code or inspector. But I think, in common with most, if not all teachers, that the old system of Payment by Results exercised the most stunting influence possible upon Elementary Education. It is a question whether it fulfilled its purpose of securing a pennyworth of instruction for every penny spent; but it certainly did secure that not more than a pennyworth should be given without risking the loss of the penny to the school. As a recognition of the worthlessness of the system, and as an attempt to remedy it, the new Code could but be welcome to all teachers who have more than a pound-shilling-and-pence interest in their work. It was a step in the right direction. With the system of "Examination by Sample," however, I am far from satisfied. It is questionable whether it is the fairest test of the year's work. Children often show a marked capacity or incapacity for certain subjects, and from other causes may remain backward in a given subject. On more than one occasion we have suffered the annoyance of children dropping for examination into that group in which they could not do themselves justice. Of course chance may have the contrary effect, but it is more satisfactory alike to teacher and scholar when the test is applied to each child in all subjects.'

Wm. Chadwick C.

'And what is your position with regard to Free Education?'

'I cannot say that I am in favour of universal Free Education. There is always a tendency to value benefits at the rate of what they cost, and I am afraid Free Education would make no exception. It is very undesirable that the parents should grow in any degree indifferent to the education of their children. In our case the school fees will be reduced from 9d. and 6d. to 6d. and 4d. respectively.'

'Do you take any measures to excite the interest of the parents in the school-work?'

Oh, yes; the system of compulsory education has naturally a tendency to make a certain class of parents stand over against the school as enemies; and though we are happily little incommoded by that foolish enmity, as our schools are fed by a very respectable class of children, nevertheless we have always felt that the direct interest of the parents in the school-work is one of the most valuable auxiliaries of the teacher. This is best promoted by bringing them into direct contact with the school-work. And that policy has been pursued in various ways during the whole time of my activity here; by public examinations, by exhibitions of work, and by public drill, in which both boys and girls have taken part. Of late years our meetings with the public have taken the form of entertainments of a more general and less distinctly scholastic character, and have assumed proportions which we ourselves did not at first foresee. By successive migrations we have reached the largest public room in the town, and it is now some years since that proved too small, so that we found it desirable to repeat the entertainment on two successive evenings. We make charges for admission, which were originally intended only to cover expenses and to provide the children a summer treat. The institution of the second night, however, placed further funds at our disposal, which has enabled the school to contribute to the local hospital.'

'It would be interesting to know what form these entertainments have taken. Do you mind gratifying our curiosity?'

'Not at all. In their latest form they are the outcome of a long process of development. The programme at first consisted entirely of singing and recitations. But when we made a fairly high charge for admission, we felt it incumbent upon us to provide an entertainment which might reasonably be regarded as an equivalent, and to that is, no doubt, due the continued popularity of our public evenings. A large chorus of boys and girls of the upper standards is always present, and the sight of the tiers of bright and happy youthful faces which the rising curtain discloses is in itself so pleasing a spectacle that it is always greeted with a murmur of admiration. The songs in chorus and the solos have maintained their place in the programme; the recitations have been considerably reduced in number. Their place is supplied in various ways—by *tableaux vivants*, which present an almost inexhaustible field for the production of pleasing effects; by various drill exercises performed by boys and girls; by the execution of toy symphonies; by the performance of short plays, comedies, or fairy plays, in appropriate costume. In short, we have always been on the look-out for whatever could produce a pretty picture or a pleasing effect. I must not forget to mention the figure-dances, as Quadrilles or Lancers, performed by little dots from the Infant School, in dainty dresses. Perhaps the prettiest was the Caledonians, in Scotch costumes of various plaids,

but so that the kilts of the diminutive cavaliers always matched with the frocks of their ladies.'

'But all this must cost a lot of money,' we ventured to remark.

'It does indeed,' answered Mr. Chadwick. 'And though the parents themselves have taken a keen interest in the parts their children were to take in the entertainments, and have largely provided the dresses for them, nevertheless, when all has been settled, the balance is often small enough. However, the idea is not to make the affair a money-making venture.'

'Then it must also cost much time. Do you feel that it repays the outlay of time and trouble?'

'It does indeed involve a considerable effort of self-sacrifice on the part of the teachers, but the results are highly valuable. Not only does it bring the parents into friendly relations with the school, but it increases the good feeling between scholars and teachers. They meet together out of class-hours, when the constraint of discipline can be dropped; they work together for the success of a common end, in which the children regard the teachers more as helpers than as teachers, for they regard the entertainment eminently as *their* entertainment. They learn the important truth that man must earn his pleasures—inasmuch as by their present labour they earn their treat; and also the not less important duty of giving help to the unfortunate. And then this unusual activity exercises a stimulating influence on their minds, which reacts profitably on their work in school. The boy who has actually played a part in a simple play, and has had his "exits and his entrances," will read his "Merchant of Venice" or his "Julius Caesar" in class with a keenness of interest and appreciation which could scarcely be produced in any other manner. We have found even in the children's play traces of the stimulating effects which these entertainments have upon their imagination.'

'That is a very interesting feature in connection with the school,' we said; 'but we must not entirely lose sight of the school-work proper.'

'On that subject there is very little to be said. The work in most schools is very similar, and your readers will be already sufficiently familiar with it. The greatest interest of this series of interviews which you are publishing lies rather in some account of the various activities which different schools have developed outside the strict limits of school-work, and from which others may perhaps be able to learn. In addition to the usual subjects taught in Elementary Schools, the three R's, and Grammar, Geography, History, and Drawing, Physiology, Botany and French are taught in the higher classes. Perhaps I ought to refer to the method of teaching reading employed in our Infant School, the Phonic System. The system was invented by the late Mr. W. L. Robinson, who was one of the managers of these schools from 1864 to 1877. The system, in the formulation and introduction of which I was able to render Mr. Robinson considerable help, is an attempt to solve the problem of teaching to read English phonetically, in spite of the irregularity of its spelling, and without using other than the ordinary characters and orthography. All the sounds of the language are classified; where one letter denotes various sounds these are distinguished by marks attached to the letter, and when one sound can be represented by various letters or groups, these find their place in the alphabet. Silent letters are also denoted in the reading books. Not the names of the letters, but the sounds they represent, are learned, so that reading becomes simply a matter of combining the simple sounds. But it is needless to go more into detail on this subject here, as I have already contributed an article upon it to an early number of THE PRACTICAL TEACHER, (April, 1881).'

We ventured to ask if this system had met with any wider acceptance, to which Mr. Chadwick answered:—

'Mr. Robinson himself delivered lectures upon it during his lifetime in various London Training Colleges, and I lectured once upon it at the Darlington Training College. It was long since adopted by some other schools, though I cannot say whether it has maintained its position there, nor where it is now to be found. With us it has always held its ground; we find that it not only largely smoothes away the difficulties of learning to read, but also tends to produce clearer enunciation, and to correct the faulty pronunciation of certain sounds which is so often to be met with in young children. In the Educational Blue-Book for 1875-6, in a favourable mention of the schools in general, the Phonic System was especially referred to.'

We took our leave of Mr. Chadwick with the wish that his activity in the school, which has so long flourished uninterruptedly under his care, may be destined at least to reach its jubilee, and the freshness and vigour of his personality, in spite of the thirty-four years spent in the trying work of a schoolmaster which have passed over his head since he entered the Wakefield Lancasterian School, allows us to hope that our wish may not be vain.

LANCASTERIAN (BOYS') SCHOOL.—TIME TABLE, 1890.

MORNING.

Day	Standards	9.15 to 10	10 to 11	11 to 12
Monday	I.	Transcription or Dictation	English	Arithmetic*
	II.	Transcription or Dictation	English	Arithmetic*
	III.	English	Transcription or Dictation	Arithmetic*
	IV.	English	Transcription or Dictation	Arithmetic*
	V.	English	Dictation or Composition	Arithmetic*
	VI. & VII.	Dictation or Composition	English	Arithmetic*
Tuesday	I.	Transcription or Dictation	Geography	Milry. Drill or Arithmetic*
	II.	Transcription or Dictation	Geography	Milry. Drill or Arithmetic*
	III.	Geography	Transcription or Dictation	Milry. Drill or Arithmetic*
	IV.	Geography	Transcription or Dictation	Milry. Drill or Arithmetic*
	V.	Geography	Dictation or Composition	Milry. Drill or Arithmetic*
	VI. & VII.	Dictation or Composition	Geography	Milry. Drill or Arithmetic*
Wednesday	I.	English	Arithmetic	Drawing
	II.	English	Arithmetic	Drawing
	III.	English	Arithmetic	Drawing
	IV.	English	Arithmetic	Drawing
	V.	Drawing	English	Arithmetic*
	VI. & VII.	Drawing	English	Arithmetic*
Thursday	I.	Transcription or Dictation	Geography	Milry. Drill or Arithmetic*
	II.	Transcription or Dictation	Geography	Milry. Drill or Arithmetic*
	III.	Geography	Transcription or Dictation	Milry. Drill or Arithmetic*
	IV.	Geography	Transcription or Dictation	Milry. Drill or Arithmetic*
	V.	Geography	Dictation or Composition	Milry. Drill or Arithmetic*
	VI. & VII.	Drawing	Geography	Milry. Drill or Arithmetic*
Friday	I.	Transcription or Dictation	English	Mental Arithmetic
	II.	Transcription or Dictation	English	Mental Arithmetic
	III.	English	Transcription or Dictation	Mental Arithmetic
	IV.	English	Transcription or Dictation	Mental Arithmetic
	V.	English	Transcrip. or Composition	Mental Arithmetic
	VI. & VII.	Transcrip. or Composition	English	Mental Arithmetic

* Arithmetic.—Lesson by teacher with blackboard, or sums worked by children on slates.
9 to 9.15, Reading of Scripture and repetition of the Lord's Prayer.
Registers closed at 9.55.

AFTERNOON.

Standards	1.30 to 2.15	2.15 to 3.10	3.10 to 4	Home Lessons
I.	Copy-books	Reading	Arithmetic*	Memory Work, Writing, and Arithmetic
II.	Copy-books	Reading	Arithmetic*	
III.	Reading	Copy-books	Arithmetic*	
IV.	Reading	Copy-books	Arithmetic*	
V.	Map-Drawing or Reading	Copy-books	Arithmetic*	
VI. & VII.	Map-Drawing or Copy-bks.	Reading	Arithmetic*	
I.	Arithmetic* or Copy-books	Reading	Arithmetic*	Memory Work, Writing, and Arithmetic
II.	Arithmetic* or Copy-books	Reading	Arithmetic*	
III.	Reading	Arithmetic* or Copy-books	Arithmetic*	
IV.	Reading	Arithmetic* or Copy-books	Arithmetic*	
V.	Reading	Arithmetic* or Copy-books	Physiology	
VI. & VII.	Arithmetic* or Copy-books	Reading	Physiology	
I.	Arithmetic* or Copy-books	Reading	Arithmetic*	Memory Work, Writing, and Arithmetic
II.	Arithmetic* or Copy-books	Reading	Arithmetic*	
III.	Arithmetic* or Copy-books	Reading	Arithmetic*	
IV.	Reading	Arithmetic* or Copy-books	Arithmetic*	
V.	Map-Drawing or Reading	Arithmetic* or Copy-books	Singing or Arithmetic*	
VI.	Map-Drawing or Copy-bks.	Reading	Singing or Arithmetic*	
VII.	Drawing	Reading	Singing or Arithmetic*	
I.	Arithmetic* or Copy-books	Reading	Arithmetic*	Memory Work, Writing, and Arithmetic
II.	Arithmetic* or Copy-books	Reading	Arithmetic*	
III.	Reading	Arithmetic or Copy-books	Arithmetic*	
IV.	Reading	Arithmetic or Copy-books	Arithmetic*	
V.	Reading	Arithmetic or Copy-books	Physiology	
VI. & VII.	Arithmetic* or Copy-books	Reading	Physiology	
	1.30 to 2.30	2.30 to 3.10		
I.	Reading	Drawing	Singing or Arithmetic*	Memory Work, Writing, and Arithmetic
II.	Reading	Drawing	Singing or Arithmetic*	
III.	Copy-books	Drawing	Singing or Arithmetic*	
IV.	Reading	Drawing	Singing or Arithmetic*	
V.	Drawing	Reading	Arithmetic* or Copy-books	
VI. & VII.	Drawing	Reading	Arithmetic* or Copy-books	

* Arithmetic.—Sums worked by children on paper.
Registers closed at 1.55.

SPECIMEN NOTE, TIME, AND EAR TESTS FOR THE CODE EXAMINATION.

BY W. G. MCNAUGHT,
Associate of the Royal Academy of Music.

Division III.—Standards III. and IV.

Time Test.

Tonic Sol-fa.—To sing on one sound to the syllable *laa* [or *doh*] an exercise in three-pulse or four-pulse measure, containing one-pulse notes, half-pulse notes, and whole pulse rests on the non-accented pulses of the measure.

Examples:

d :d	d :d	d :d.d	d :d	d :d	d :
d :	d :				
d :d.d	d :d	d :	d :	d :—	—:—
d :— :d	d :d :d	d :d.d :d	d :— :—		
d : :	d : :d	d : :d	d :— :—		

Time Test.—To sing on one sound to the syllable *laa* [or *doh*], an exercise in $\frac{4}{4}$ or $\frac{3}{4}$ time containing semibreves, minims, crotchets, and quavers, with dotted minims, and rests on non-accented portions of the bar.

Example:—

Tonic Sol-fa.

The new points are (1) the use of three-pulse measure; (2) half-pulse notes, and (3) whole pulse rests.

Preliminary Tests.

Three-Pulse Measure.

(Take care that the notes struck in the *weak* pulses are lightly accented. The strong accents generally take care of themselves.)

(139)

d :d	:d	d :d	:d	d :—	:—
d :—	:d	d :d	:d	d :—	:d

(140)

d :—	:—	d :—	:—	d :d	:d
d :d	:d	d :—	:d	d :d	:d

(141)

d :—	:d	d :—	:—	d :d	:d
d :—	:d	d :d	:d	d :—	:d

Four-Pulse Measure.

(142)

d :—	—:—	d :d	d :—	d :—	—:—	d :d	d :—
d :—	d :—	d :—	—:—	d :—	d :—	d :d	d :—

Half-Pulses.

Tests with half-pulses in Four-pulse measure were given in December, 1891. See Nos. 73 to 77.

It is best to divide the unaccented pulses at first.

Do not always point on the blackboard while the children sing. It is very necessary to accustom the children to follow proper beating.

(143)

d :d	:d	d :d.d	:d	d :d.d	:d.d	d :—	:—
d :d.d	:d	d :d	:d	d :—	:—	d :—	:—

(144)

d :—	:d.d	d :d	:d	d :d.d	:d.d	d :—	:—
d :d	:d	d :—	:d	d :d.d	:d.d	d :—	:—

Rests.

Rests in Four-pulse measure were given in Nos. 74 to 77 (December 1891).

(145)

d :—	:	d :—	:	d :d	:d	d :—	:—

(146)

d :	:d	d :	:d	d :—	:d	d :	:

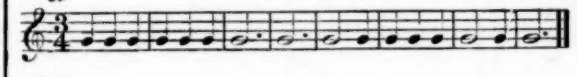
Staff Notation.

The new points are (1) the use of Triple time; (2) the use of quavers, semibreves and dotted minims; and (3) the use of crotchet rests.

Preliminary Tests.

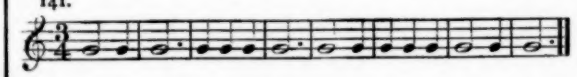
Quavers and Rests in Common time were given in Nos. 74 to 77 (December, 1891).

139.



140.

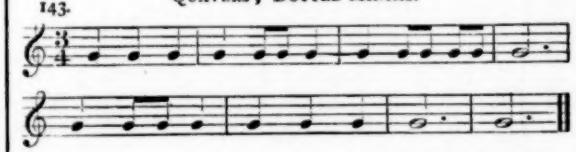
141.



142.

Quavers; Dotted Minims.

143.

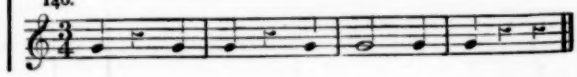


144.

Rests.

145.

146.



STANDARD TESTS.

Tonic Sol-fa.

(147)

d	:—	:d.d	d	:d	:d	d	:	:	d	:	:
d	:d.d	:d.d	d	:d	:d	d.d	:d	:d	d	:—	:—

(148)

d	:d	:d.d	d	:—	:—	d.d	:d.d	:d.d	d	:—	:—
d	:	:d	d	:d.d	:d	d	:	:	d	:—	:—

(149)

d	:—	:d.d	d	:d	:d	d.d	:d	:d	d	:	:
d	:—	:—	d	:d.d	:d	d	:—	:	d	:—	:—

(150)

d	:d	d.d	:d	d	:	d	:	d	:—	d	:d.d
d.d	:d.d	d	:—								

(151)

d	:d.d	d	:—	d.d	:d.d	d	:—	d.d	:d.d	d	:d
d	:	d	:—								

(152)

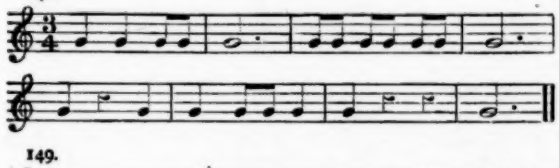
d	:—	:—	:d	d.d	:d.d	d	:—	d	:	d	:
d	:—	:—	:—								

Staff Notation.

STANDARD TESTS.

147.

148.



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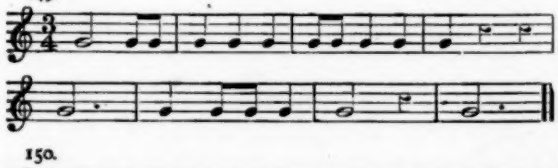

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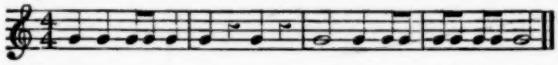

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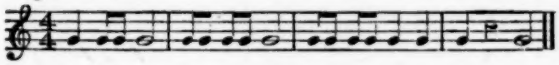

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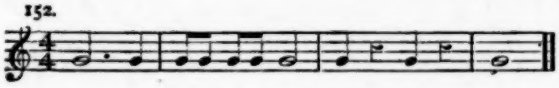


BEYOND THE CODE.

The following combine in an easy manner the time and tune of this Division.

Tonic Sol-fa.

(153)

d	:—	m	:s.f	m	:—	r	:m	f	:s.l	s	:f
f	:—	m	:s	d'	:—	s	:s.l	s	:—	f	:
m	:	r	:	r	:m	d	:—				

(154)

m	:f.s	l	:t	d'	:m	s	:d	r	:m	f	:m.r
m	:f	s	:	l	:—	—	:t	d'	:t.l	s.f	:m.r
m	:s	f	:m	f.s	:l.t	d'	:—				

A very good form of combined test is to give a number of tonal phrases to the same rhythmic form.

(155)

(*a*)	d	:—	d.d	:d	d	:d.d	d	:
(*b*)	m	:—	s.m	:d	r	:m.f	m	:
(*c*)	s	:—	d'.s	:m	f	:m.r	d	:
(*d*)	m	:—	r.d	:t_1	d	:m.s	f	:
(*e*)	m	:—	f.s	:l	s	:l.t	d'	:
(*f*)	d	:—	r.m	:f	m	:s.m	d	:
(*g*)	s	:—	f.m	:r	d	:m.s	d'	:

(156)

(*a*)	d	:	d.d	:d.d	d	:d.d	d	:—
(*b*)	s	:	f.m	:r.d	m	:m.f	s	:—
(*c*)	l	:	s.f	:m.r	d	:m.s	d'	:—
(*d*)	m	:	r.d	:t_1.d	r	:m.f	m	:—
(*e*)	f	:	s.f	:m.f	s	:l.t	d'	:—
(*f*)	d'	:	d.r	:m.f	s	:d.t_1	d	:—
(*g*)	m	:	f.s	:l.t	d'	:s.m	d	:—

(157)

(*a*)	d	:d.d	:d	d	:—	:—	d.d	:d.d	:d
(*b*)	m	:f.s	:m	r	:—	:—	s.l	:s.t	:d'
(*c*)	s	:f.m	:r	m	:—	:—	d'.t	:d'.s	:m
(*d*)	f	:s.f	:m	r	:—	:—	l.s	:l.t	:d'
(*e*)	m	:s.l	:s	d'	:—	:—	r.m	:f.m	:r
(*f*)	s	:f.m	:r	t	:—	:—	d'.s	:m.s	:d'
(*g*)	d'	:t.l	:s	d'	:—	:—	s.l	:s.m	:d

(158)

(*a*)	d	:—	:d.d	d.d	:d	:d.d	d	:d.d	:d
(*b*)	s	:—	:m.s	l.s	:f	:m.r	m	:s.m	:d
(*c*)	d'	:—	:t.d'	s.f	:m	:r.d	r	:m.f	:m
(*d*)	s	:—	:l.t	d'.t	:d'	:t.l	s	:f.m	:r
(*e*)	m	:—	:r.d	t_1.d	:r	:m.f	s	:l.t	:d'
(*f*)	s	:—	:f m	r.m	:f	:m.r	d	:m.s	:d'
(*g*)	d'	:—	:s.f	m.r	:d	:r.m	f	:s.l	:s

COMBINED TIME AND TUNE, WITH ta AND fe.

Doh = C or D.

(159)

m	:—	r.d	:r.m	f	:s	m	:s	d'	:ta	l	:t.d'
s	:f	m	:—	s	:fe	s	:s.f	m	:s	d'	:—
d'	:ta	l	:s	l	:t	d'	:—				

Doh = F or G.

(160)

d :—	t_1 :d	r :t_1	d :s_1	d :ta_1
l_1 :t_1	d.r :m.f	s :—	s :fe	s :f.m
r :d	d :t_1	d :ta_1	l_1 :t_1.d	r :t_1
d :—				

Doh = C or D.

(161)

m :s :m	m :r.m :d	r :m :f	s :fe :s	s.f :m.r :d
d' :ta :l	s :l :t	d' :— :—		

Doh = F or G.

(162)

s :— :m	s :f :r	m :d :m	s :s.fe :s	f.m :r :m
d :ta_1 :l_1	t_1 :— :—	d :— :—		

(163)

(a)	d :d.d	d :d.d	d :	d.d :d	
(b)	m :s.d'	ta :l.t	d' :	m.r :d	
(c)	m :s.fe	s :f.m	r :	m.s :d'	
(d)	d' :t.d'	ta :l.l	t :	d'.r' :d'	
(e)	s :s.fe	s :f.m	f :	m.r :d	
(f)	d :m.s	d' :ta.l	t :	s.t :d'	
(g)	s :f.m	r :s.fe	s :	f.r :d	

(164)

(a)	d :— :d.d	d :— :d	d :d.d :d		
(b)	m :— :r.d	d' :— :ta	l :l.t :d'		
(c)	s :— :m.d	s :— :fe	s :f.m :r		
(d)	m :— :r.d	s :— :d'	ta :l.t :d'		
(e)	s :— :fe.fe	s :— :f	m :f.r :d		
(f)	d' :— :ta.ta	l :— :s	f :m.r :d		
(g)	m :— :f.s	l :— :s	fe :s.f :m		

Staff Notation.

153.

154.

155.

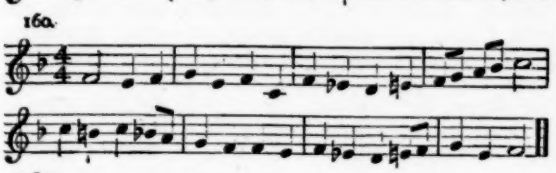
156.

157.

158.

159.

160.



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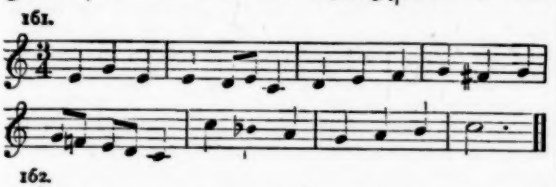
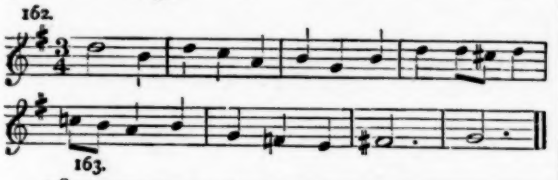


162.



163.

164.

DECORATIVE NEEDLEWORK.

BY MAY MORRIS.

Design (*continued*).—To get a harmonious design we must study and consider well of what qualities such a design must be built up. The subordination of one form to another in some way is essential; there must be some leading lines and forms, that, from their central position or broader massing, attract the eye more than others. In the sprig (Fig. 1), which com-

Fig. 1.

poses the design indicated in Fig. 2, the flower is the central point of attraction, the leaves and stems being subordinate to it. The forms of which a design is made should fall into their places naturally and without effort. On looking at some unskilful decorative work, every line seems to clash with another, the design being restless, and 'all on end,' lacking that breadth and repose that characterise good work. The danger of insipidity and dulness that a 'quiet' design may fall into must be avoided by *contrast*, that subordinating of one part to another, spoken of above. Such contrast may be obtained in various ways; for instance, by opposing delicate tracery or smaller forms of different kinds to the principal masses of striking or broad forms, such opposition presenting a rich and pleasing variety to the eye. This contrast implies a certain complexity of design, which is not always necessary or suitable, but it certainly greatly enhances the richness of the intended decoration.

The value of *repetition* in decoration on large surfaces will easily be seen, but it is further needed in the different parts of the design itself, as, for instance, the repetition of petal against petal, leaf beside leaf. *Symmetry* goes hand in hand with this, leaf balancing leaf on the opposite sides of the stem. There is also that more subtle repetition found in elaborate design, of one form 'echoing' another, without exactly repeating it. This, however, will be better understood after studying good ornamental work carefully, and carefully considering its composition.

A glance at the diagram (Fig. 2) will give some idea of the nature of these laws of repetition, balance, and so

forth, that govern design. The diagram represents the simplest possible expression of a 'powdered pattern,' that is, of a design dotted or powdered over the surface

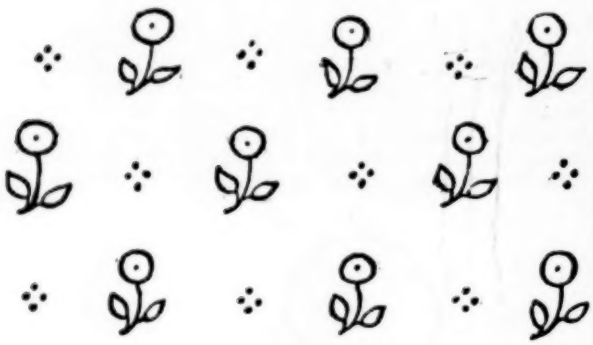


Fig. 2.

at regular intervals. In the little sprigs we have *repetition*, and in so far as they alternate in position in alternate rows we have *symmetry*, and symmetry and balance also in the individual sprig, the leaves of which lie opposed each side of the stem; in the rosettes or groups of dots between the sprigs, as well as in the construction of the sprigs themselves, we have *contrast* or subordination.

I have sufficiently enlarged elsewhere on Convention and Realism, or truth to nature; I will therefore only again remind you, and very earnestly, not to note carelessly one-half of my observations on this important point without due consideration of the other half, the one assertion being incomplete without the other. Man's instinct is creative as much as imitative, and convention is nothing but a representation based on observation of and fidelity to nature.

Lines and Curves.—In considering the different elements of Design, a little talk about the value and qualities of lines will clear up a good many difficulties for the beginner. Remember well this: a beautiful curve has *variety* in every inch of it; that is to say, it changes its direction constantly. Look at Fig. 3,

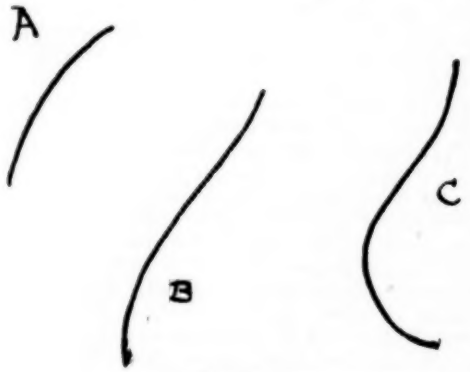


Fig. 3.

which at A shows a curve, which is the segment of a circle. A true circle being drawn mechanically with a compass from a fixed centre, every portion of its line is regular and equal in value to every other portion. Such a curve in its mechanical perfection, therefore, is unsatisfactory to the designer's eye, and its unconscious, as well as conscious, adoption should be vigilantly guarded against. At B, on the contrary, we have a satisfactory curve, very familiar to anyone who notes the poise of a flower-stem or the swing of a tree-branch. Look at it and compare it with A, and you will, I hope, see what is meant by variety in a curve. At C, the outline of a full spring-bud, we have a still more varied line. Nothing could be better as studies for simple and complex curves than faithful copying of a single leaf from the different plants and trees which may be accessible to you. Note the difference between the exquisite crispness of outline in the beech-leaf and the delicate simplicity of the slim willow-leaf; or again, the rich variety of line in the serrated vine-leaf. There is another thing to remember about curves: every curved line is stronger at its base or attachment than at its apex; the further from the base, the more delicate, and finally the more *weak* it grows. A curve, therefore, which is prolonged beyond a certain point loses its strength, its expression of poising and balance, and its indecision is extremely unpleasing. In Fig. 4 Curve A is right; continue it

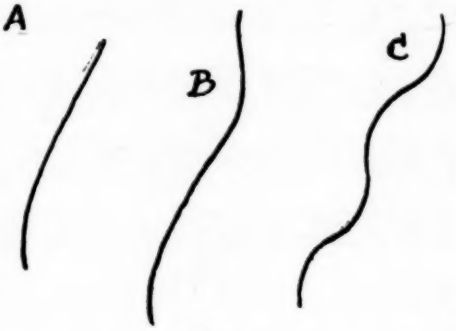


Fig. 4.

a little, and we get B, which reminds one of the woefully weak lines of a bad wall-paper. If a prolonged curve is wanted for some definite purpose, it should contain an actual repetition of direction as at C.

In planning out and starting a design always work from a centre, both for the detail and in the composition itself. For instance, if you are bringing a rose into your work, fix in your eye a certain central point, and let the petals converge towards it; the same in drawing a leaf (such as a complex leaf as at B, Fig. 5). Without some such definite order the petals of the flower, or the parts of the leaf, will lie at all sorts of odd angles, and you will be puzzled, and unable to tell exactly where and how they are wrong. Designs differ considerably in form and method; some are worked entirely from a centre, while others are more flowing, and may have a central form, but not set or strongly marked. But in all ornamental design, whatever the construction, the details themselves must have this definite centre, which gives unity and coherence, be it masked or revealed. *The law of radiation* is, in fact, all-pervading in design. In the little branch (A), at Fig. 5, the stem itself, roughly speaking, constitutes the centre, whence the leaf-stalks radiate and fall outwards with just that amount of irregularity, or, more strictly speaking (for nothing is wholly irregular

in design), that amount of variation that will be felt and made use of as the student grows more familiar with the designer's art.

I think with these notes on the formation of design, the student should be sufficiently furnished to study

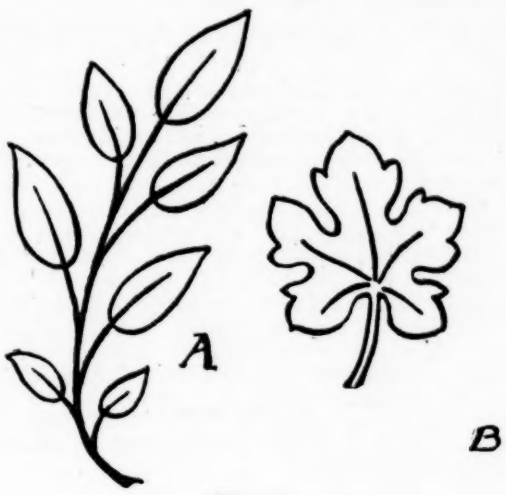


Fig. 5.

examples of fine ornament in our museums, or from coloured plates which can be easily obtained. It will be easier now, I hope, to recognise the qualities, good or bad, of such work, and from study to practice should be a short step. In always recommending ancient rather than modern work for study, I do so with intent, for in mediæval ornament, whether in a MS. or a figured stuff, or embroidered cloth, one is always sure that though the interest of detail and beauty of form may vary very much, the work is not lacking in the essential qualities of good design, and is thorough in its way, and executed with due knowledge of material and skill of hand. In modern decorative work the estrangement between designer and executant creates a want of unity and coherence in the work produced. On the one hand, the designer frequently has no full knowledge of the materials and tools employed, and his drawings, made independently of such things, lose force or delicacy in the execution; while, on the other hand, the craftsman loses the knowledge he formerly possessed of the value of lines and masses, as he is no longer, as a rule, called upon to think and *create* his work—a disastrous division of labour, with disastrous results.

After writing thus far, I had turned to Ruskin's '*Elements of Drawing*' to see what his word to the beginner is on the subject of Composition and Design. I find here so exactly what is wanted said on many points, that I hope those who wish to pursue the subject will look up this volume which contains much food for thought through its pages. Many of the observations apply as much to the decorative as to the higher pictorial arts, and I am tempted to quote the master's words on the 'Law of Contrast,' which, giving as they do the true ethical meaning of this law in a few clear and simple words, should be helpful to you:—'Of course the character of everything is best manifested by Contrast. Rest can only be enjoyed after labour; sound, to be heard clearly, must rise out of silence; light is exhibited by darkness, darkness by light; and so on in all things. Now in art every colour has an opponent colour, which, if brought near it, will relieve it more completely than any other; so, also, every form and line may be made more striking to the eye by an opponent form or line near them; a curved line is set off by a straight one, a massy form by a slight one, and so on; and in all good work nearly double the value, which any given colour or form would have uncombined, is given to each by contrast.' The next paragraph contains a warning against vulgar exaggeration in the use of this artifice.

(*To be continued.*)

INSPECTION OF A LIVERPOOL SCHOOL.

FEBRUARY, 1892.

As many teachers are somewhat dubious as to the advisability of having their schools examined by sample, it may be interesting to some to know the manner, as described by H.M.I., in which the results are arrived at under this system. Certain children are chosen to read, a few by the teacher and the remainder by H.M.I. (in our schools the teacher was permitted to choose five and the Inspector selected another fifteen), and against the names of these children a distinguishing mark is made to indicate that they form the sample. The whole class does all the paper work, but only the papers of those children are examined who have previously read. Should it so happen that the sample shows a weakness in any particular subject, say Arithmetic, before the class is condemned as a whole, all the Arithmetic papers of the standard are examined, and the Report based upon the full examination. On the other hand, should the sample turn out to be particularly good, the class is credited accordingly. When conducted in this manner no teacher need fear a sample examination.

The method adopted in valuing the Dictation Exercise may perhaps be useful to teachers for their own private examinations. The total number of mistakes is divided amongst the whole sample, and the estimate is thus based upon the average number of mistakes.

The following gives our Examination in detail:—

BOYS' DEPARTMENT.

STANDARDS VI. AND VII.

Reading. — Beginning with Standard VII., the Inspector took the boys by groups, and after producing a school newspaper questioned them upon 'Newspapers' generally. Among other questions he inquired 'Why are newspapers so called? The names of some? The meaning of Mercury, Courier, Echo, Times, Telegraph, etc.?' He specially inquired how the god Mercury is depicted. To the question, 'Why do the better class people read the *Times*?' the answer 'Because of the expense' was given and accepted.

The Reading matter consisted of a series of detached paragraphs of more than ordinary difficulty. Each

boy was required to answer a question on the meaning of what he had read.

Composition.—Choice of three subjects was permitted:—

1. A Letter on 'Your favourite Amusement.'

2. A Theme on 'The Manners and Customs of any Foreign Nation.'

3. Or, Any Animal.

Arithmetic (Standard VI.).—The Arithmetic was of a particularly easy character. Three sets of cards were used, from which the following are the problems:—

1. A cistern is filled by one tap in 7 hours, by a second in 9 hours, and emptied by a third in 8 hours. If all three taps be opened together, when will the cistern be full?

2. A woman spent $\frac{1}{2}$ of her money and then $\frac{1}{8}$ of the remainder. She then had 5s. 11½d. left. How much had she at first?

3. A school had 560 scholars, and of these ·75 passed in Reading, ·35 in Arithmetic, and $\frac{3}{8}$ in Dictation. How many failed in each subject?

4. A grocer mixes 30 lbs. of coffee at 1s. 8d. per lb. with 3½ lbs. of chicory at 7½d. per lb. He then sells the mixture at 1s. 7d. per lb. Find his gain or loss.

No questions set in Metric System.

Standard VII.—Four sets of cards used, bearing sums of a reasonable nature. The following are from the Problems:—

1. A man has £5,000 in 3 per cent. stock at 96, which he transfers to 4½ per cents. at 103. Find the difference in his income.

2. An article sold at a loss of 5 per cent. brings 12s. 6d. Find the selling price to gain 10 per cent.

Geography (*Standard VI.*)—The teacher was first set to question the class, after which the Inspector continued the examination, taking an imaginary journey from Quebec to Sydney in Australia. Questions were asked concerning the calling places on the way, the islands and countries passed, the oceans traversed, etc.

The examination of Standard VII. was conducted on similar lines.

Grammar.—A sample of Standard V., and the whole of Standards VI. and VII. were examined together. The following sentence to be analysed and parsed was written on the board:—'At the other end of the village was a pump, and the pony remembered that water sometimes came out of it and fell into a trough underneath.' The answers to the questions in Grammar were almost invariably taken from Standard V. first, followed by VI., then VII. To the catch question, 'Stand all here who are of the masculine gender,' the majority of the boys fell into the trap and stood up; others, however, explained to him the difference between the terms 'gender' and 'sex.' This was then followed by the request that all should stand who belonged to the 'male sex,' and, of course, all stood up.

Recitation.—The selection chosen for recitation was taken from *The Taming of the Shrew*. The questions were mostly asked upon the *dramatis personæ* and the object of the play, what it was intended to teach.

Standard V.

Reading.—Three-fourths of the class read from their own books, the remaining fourth from the 'unseen' school newspaper used with Standards VI. and VII. Nearly every boy was asked a question as to the meaning of some part of his reading.

Composition.—An easy story, entitled 'A Useful Ally.'

Dictation.—The passage for dictation in this Standard, as also that in Standard IV., was taken from Blackie's 'Three Hundred Dictation Exercises for Standards IV. to VII.,' and was dictated by the teacher of the class.

'There is no doubt whatever that there are great numbers of tenant-farmers who are not complaining, and who have no reason for complaint. And I firmly believe if all were like the few, and possessed the same energy, the same skill in the adaptation of the resources of their land to the requirements of the markets—above all, if they asserted their independence in making terms with their landlords, they would all overcome their difficulties more speedily, more certainly, and more permanently than can be looked for from any assistance likely to be extended to them by the House of Commons.'

Arithmetic.—Three sets of cards were used, none containing difficult sums.

A.

1. $\frac{3}{5} + \frac{2}{3} - \frac{5}{7} + \frac{1}{8}$.
2. 6,050 articles at £1 13s. 9d. each.
3. Bill (not receipted)—
   9 lbs. seed at 3s. 6d. per lb.
   15 cwts. coal at 24s. per ton.
   15 sacks at 7½d. per sack.
   900 lbs. wool at 7½d. per lb.
   17¾ lbs. coffee at 1s. 2d. per lb.
4. What weight can be sent for 5s. 9d. if 72 lbs. be sent for 2s. 3d.?

B.

1. How long will 30½ tons of coal last if 1 ton 10 cwts. 2 qrs. last 1 day?
2. What must be added to $\frac{5}{6}$ to make $\frac{8}{7}$?
3. Cost of 740 articles at 16s. 11d. each.
4. I bought £1,260 worth of cheese at 84s. a cwt., and sold it at 10d. a lb. Find total gain.

C.

1. Bill—
   15 lbs. tea at 2s. 3d. per lb.
   9 ozs. coffee at 1s. 2d. per lb.
   1¼ cwt. sugar at 2½d. per lb.
   15 lbs. cheese at 7½d. per lb.
   2½ lbs. cloves at 2½d. per oz.
2. Cost of 976 books at 14s. 7½d. each.
3. If 8 yds. of cloth cost £10 2s. 6d., how many yards can be got for £1 14s. 9d.?
4. What must be added to $\frac{1}{2} + \frac{1}{6}$ to make $\frac{4}{5}$?

No Metric System.

Geography.—Teacher questioned class on Holland and Belgium; then the Inspector asked a few supplementary questions on the same countries, pointing to mountains, islands, rivers, etc., on a blank map, and asking for their names. Finally a boy was asked to point to a place 0° Longitude and 55° N. Latitude.

This, of course, was impossible, as that particular spot is in the North Sea.

The subject was concluded with a few general questions on Latitude and Longitude.

Grammar.—The Inspector asked the Head Teacher if the boys in Standard V. could analyse Complex Sentences. On being answered in the affirmative, he then asked if there was any objection to his examining Standards V., VI., and VII. together. This was assented to; and the Teacher having chosen five boys, another twenty were chosen by H.M.I., and this sample was examined in Grammar with VI. and VII., as described above.

The Grammar Questions included word-building, etc.

Recitation.—'The Pied Piper of Hamelin.'—After the Teacher had elicited from the boys an account of the story the Inspector heard about a dozen boys recite. The meanings of 'pied' and 'obese' were required; also an adjective made from the former and a noun from the latter word.

Question.—What is ermine an emblem of?

STANDARD IV.

Reading.—Reading in this Standard was by sample. The Teacher was permitted to choose ten boys and the Inspector added another fifteen. One book used. Each boy was required to answer a question on meanings or allusions.

Dictation.—'The poor woman had risen no more from her bed, where she lay in sickness and suffering, yet in patient trust, watching the sky through the window that faced her pillow, looking for the relief that came at last. For even at the eleventh hour, when hope seemed almost over, and they had learned to submit to their expected trial, the dark days began to be varied by a few hours of sunshine, and though the gloom returned again it soon passed away, and the sun shone out once more.'

Arithmetic.—The Arithmetic Tests in this Standard, as in the others, contained nothing unreasonable. The following are selected from the three cards used:—

1. If 20 score of sheep cost £950, find the cost of 3 score.
2. Find the cost of 13 cwts. of coal at 2d. per lb.
3. How many seconds in a Leap Year?
4. A farmer bought 42 sheep for £99 15s., and sold them at £2 13s. 6d. each. What did he gain?

No decimals.

Mental Arithmetic.—The Teacher was permitted to examine the class in Mental Arithmetic, after which the Inspector put one question—How many feet are there round a square yard of cloth? To which he received very few correct answers.

Geography.—The Inspector conducted the examination in this subject. Beginning with British North America, he dealt first with the mouth of the St. Lawrence, proceeding up the river to the Lakes. Questions were asked about the Pacific Railway, the Rocky Mountains, the Cascade Mountains, British Columbia, with its productions and chief towns. He then dealt with the Cable, and asked for Heart's Content and Valentia Island. Questions on Ireland followed, dealing with ports, productions, climate, chief manufactures (especially the linen manufacture), the Cork butter market, and the wild district of Connemara.

Grammar—The boys, taken consecutively, were called upon to parse the following sentence:—

'The tall boy carried twelve oranges in his basket, very carefully.'

Reasons were required why certain terms were used respecting the words in parsing, *e.g.*, Why is 'oranges' neuter gender? A number of questions were put respecting neuter gender, which was invariably described to him as being applied to names of things without 'sex'; the Inspector's object being to find out whether any would fall into what he afterwards said was a common error among boys, of defining nouns in neuter gender as 'things without life.'

STANDARD III.

Reading.—In this Standard, as in the others, the teacher chose 5 boys, and the Inspector another 15, to form the sample.

The piece selected, and the questions asked, were of a reasonable character.

Dictation.—The following passage, taken from the Reading Book, was dictated to the whole class:—

'I took much interest in their games, and I will tell you about some of them. Kite-flying is one of the chief amusements. The boys also make water-wheels, which they place in the streams of swift water that run in the streets. These give motion to many different kinds of toys.'

Arithmetic.—The Arithmetic test was of an ordinary description, from which the following are the problems:—

1. There were 17 houses on one side of a street, 9 windows in each house, and 12 panes in each window. How many panes would there be in all?
2. A pony, carriage and harness cost 75 guineas; the pony cost £35 10s. 6d., and the harness cost £15 12s. How much did the carriage cost?
3. On the 20th June, 1889, the Queen had reigned 52 years. How many days is that, counting 365 days in a year?
4. Two ships, each carrying 100 tons cargo, started from the same place at the same time. One arrived in port 5 days before the other. How many hours is that?
5. A man had 19 score of sheep grazing on one hill, and 17 score and 6 on another. How many must he put on the second hill to make the same number as on the first?

Mental Arithmetic.—After the teacher had asked a few questions, H. M. I., beginning at one end of the class, questioned in the following manner:—

From 100 take 9 (Ans. 91); take away 9 (Ans. 82); take away 9 (Ans. 73); take away 9 (Ans. 64); etc. etc. Then, continuing in the same way—From 100 take 11 (Ans. 89); take away 11 (Ans. 78); take away 11 (Ans. 67), etc. etc.

Geography.—Using a blank map of England, the Inspector pointed to various counties, physical features, etc., and asked for names. This was followed by requiring names of towns pointed to, with their manufactures. The chief manufacture of Lancashire was asked for, to which the answer 'cotton goods' was not satisfactory. 'Calico' was required, given, and accepted.

Grammar.—This subject was taken with the Recitation. Words were picked out here and there and parsed, after which a line from the piece was chosen and each word parsed. No question was asked beyond the Code limit, although if boys could tell more, they were permitted to say all they knew about a word.

STANDARD II.

Reading.—Twenty boys composed the sample, and were chosen according to the method formerly indicated. The piece selected presented no extraordinary difficulties, and formed a fair test for the Standard.

Dictation.—The piece for dictation was taken from the same book that had been used for reading, and was as follows :—

'She told Jack, with tears in her eyes, that her cow must now be sold to buy them food. Jack felt sorry to see his mother so full of trouble, and said that if she would trust him to drive the cow to the next village he would sell her, and make a good bargain.'

Arithmetic.—Five sums were given to each child: one addition sum of five lines, one subtraction, one division, one multiplication, and one problem. The following was one of the problems :—Mary makes 236 stitches in an hour, and Jane makes 148. How many more stitches does Mary make than Jane in six hours ?

Mental Arithmetic.—The questions in this subject were almost all limited to the pence table and short problems, involving the use of money ; *e.g.*, the following was asked: $1\frac{1}{2}$d. + $3\frac{1}{4}$d. + $2\frac{1}{4}$d. ; what change out of 1s. ?

All the problems were based upon this style.

Geography.—H.M.I. told the teacher to question the class on the Geographical Definitions, after which he questioned on the Motions of the Earth, dwelling specially on the Yearly Motion. Our question he asked, which may be new to some, and which in the form he presented it certainly was to the class,—'Stand up those who have ever been round the sun.'

Grammar.—After picking out nouns and verbs from their recitation, the Inspector gave the following words :—Whistle, irons, pinch, and walk. The boys were then told to make sentences, using these words first as nouns, then as verbs ; and at the same time to give reasons why in some cases they were called nouns, and again in others, verbs.

STANDARD I.

Reading.—Sample chosen as in other Standards.

Two books used, and questions asked in explanation of the passage read.

Transcription.—'Placing them in a basket, Lucy took them into the house to show them to her mother.'

Arithmetic.—The whole class required to work one addition and two subtraction sums. Noughts freely used.

Sample only examined.

Mental Arithmetic.—One section of the class was examined in tables, and another in addition and subtraction of money.

The method of proceeding was as follows :—

5 nines (Ans. 45), take away 9 (Ans. 36), take away 9 (Ans. 25), take away 5 (Ans. 20), half of that (Ans. 10), add 5 (Ans. 15), double it (Ans. 30), etc., etc. The answers to these questions were required promptly, or the child was passed over.

As a very fair sample of the money sums, the following may be taken :—I pay $1\frac{1}{2}$d. for cakes and $2\frac{1}{2}$d. for toffee ; how much have I left out of 6d. ?

Geography.—A blank map (Holland and Belgium), not seen by class before asked for, upon which children were asked to point out rivers, towns, mountains, etc.

The teacher was then asked to put questions on the plan of the school, the Inspector interposing with such questions as 'Where must you be in order to draw a plan ?' (Answer wanted—In an elevated position.)

How would you begin to draw one ? (Answer wanted—Walls first.)

He suggested that the children should be taught to draw the plan of the school on their slates.

Grammar.—Working on the words which he had previously used in Standard II., the Inspector gave the sentence : 'The boy blew a whistle,' and asked what part of speech 'whistle' was ? Then from the sentence, 'The boy whistles,' to name the part of speech to which 'whistles' belongs.

How do you know 'whistles' is a verb ?

How do you know 'whistle' is a noun ?

Holding up his pencil before the class, he asked, What is this ? Pencil. Is it a noun ? No, sir. What is then ? The name.

The same questions were applied to his overcoat, with the same answers. Determined, however, to *test* their intelligence further, he asked : What are nouns made of ? To which he received no answer. He next asked for a noun, and the word 'boy' was given, which he wrote on the board. 'Now,' said he, 'what is that made of ?' and was told 'chalk' and 'white stuff.' Finally he told the class nouns were made of 'letters,' and turning to the teacher he said, 'I think they ought to have answered that question.' We respectfully beg to differ from H.M.I.

Recitation.—After hearing the piece recited, the teacher was asked to question the class, which the Inspector supplemented by the following :—What is a gentleman ? What is meant by 'sons of the soil' ? To the latter question the answers 'farmers,' and 'ploughmen,' and 'gardeners,' were not accepted ; the answer wanted was 'peasants.'

MUSIC.

Division 4 had a very searching examination in theory. Questions were put bearing upon clefs, keys, etc., *e.g.*, What name is given to the clef in which the treble is written ? The bass ? How do you write the key of E♭ ? Which notes are flattened ? etc. Meaning asked of $\frac{3}{4}$, $\frac{6}{8}$, $\frac{4}{4}$, $\frac{2}{4}$, etc.

A note test was set in D, and one in A minor, which latter exceeded the Code requirements. No ear test given.

Division 3 had an easy note test and also an easy time test in $\frac{4}{4}$. Ear exercises **d t d'**, **t d' d'**.

GIRLS' DEPARTMENT.

Respecting the examination in this department, neither the written work nor the reading presented anything more difficult than the girls might be expected to be able to do, for whilst the arithmetic was but of the ordinary stamp, the writing exercises

were fair, and, as far as the dictation tests were concerned, did not present more than the usual number of catchy words. Beyond these subjects, however, the examination was of a very unsatisfactory nature; for although the tests were by no means difficult, yet the questions were such as to puzzle the children rather than to draw from them intelligent answers, in many instances no discrimination being exercised as to the actual Code requirements for the Standard under examination. This was especially noticeable in the grammar of Standards V., VI., and VII., in the mental arithmetic, and in the singing.

Sample examination was adopted and carried out on the same lines as in the Boys' Department.

The following are the details of the Examination.

Standard VI. and VII.

Reading.—Part of the class read from a School Newspaper which the Inspector brought with him, and the remainder from a school reading book. Some few questions were asked on the meanings of words used, none being of any great difficulty.

Composition.—This consisted of a letter describing 'Any Entertainment' or 'All that one would do in making a cup of tea.'

Arithmetic.—The test-card scontained nothing which might be considered as an unfair test from which we select a few problems as under :—

Standard VII.

1. If £960 amounts to £1,000 in four years, what is the rate per cent.?
2. What per cent. is 987 of 1,061?
3. Nine men weigh 96 stones 12 lbs. Three of them weigh 8 stones 6 lbs. each, two weigh 14 stones 8 lbs. each. What is the average weight of the other four?
4. What amount of stock can be bought for £4,800 at 89 per cent?
5. If a man buys milk at 2¾d. per quart and sells it at a gain of 25 per cent., what does he sell it at per gallon?
6. The average daily earnings of a man is 6s. 6d. On Monday and Tuesday he earned 5s. 6d. a day; on Wednesday he earned 6s. 3d.; on Thursday, 6s. 9d.; on Saturday, 6s. What did he earn on Friday?

Standard VI.

1. A girl has to hem a piece of calico. When she has done ⅜ she has 2½ yards left. How many yards were given to her to do?
2. If a man earns ⅜ more wages than a woman, and the woman ⅛ more than a boy, and a boy gets 2s. 6d., how much each do the man and woman get?
3. If a boy and girl start out together, and the boy takes 57 steps a minute and the girl ½ less each minute than the boy, how far behind would the girl be when the boy had walked a mile?

Mental Arithmetic.—Very few questions were put in Mental Arithmetic.

Referring to the answer of a sum, the Inspector asked 'Why is $\frac{1}{10}\frac{3}{0}$ wrong? What is the difference between ⅓ and ⅜? Why is there no difference?'

What is the value of ·75, ·25, ·5? etc., etc.

Grammar.— Standards V., VI. and VII. were examined together in this subject from the following sentence, which was written upon the board :—

'The *next day when* the mowing of the field was completed, the *nest* from *which* the eggs *had been* so *thoughtfully removed* was *found*.'

The whole was analysed, after which the italicised words were parsed.

The force of the prefix 'com' in completed was required, after which the girls were asked to make a word out of nest. They gave 'nestling,' and were then questioned as to the meaning of the affix 'ling.'

No answer in Grammar was accepted without a satisfactory reason why it was given.

Needlework.—This was in accordance with Code requirements.

Standard V.

Reading.—One of the Standard Reading Books used for the whole class. A few questions were asked having reference to the passage read, none of which presented much difficulty.

Composition and Dictation.—Part of the class had to write an ordinary story, the remainder a piece of dictation, as follows :—

'There are various opinions as to the character of the lion. Some hold him up as a model of generosity and courage, sparing the weak but fighting the strong. Other writers represent him as a mean, sneaking animal afraid to face an armed man, and preferring to obtain his prey by stealth rather than by open warfare. Others, again, consider that his temper is uncertain, and that one day he will fight with great courage, while on another he will fly in terror from a comparatively insignificant foe.'

Arithmetic.—The following problems are taken from the cards distributed to Standard V. :—

1. If a man built a wall 18 feet high in six days, how long would he take to build one 30 feet high?
2. If oranges are sold at 9½d. a dozen, how many can be bought for £2 8s. 6d.?
3. The cost of 3 ounces of tobacco is 1s. 10½d. What will be the cost of 10 lbs.?
4. If I buy oranges at ¾d. per dozen, how many can I get for 96 farthings?

Mental Arithmetic.—Taken with VI. and VII. (see above).

Grammar.—Same as VI. and VII. (see above).

Needlework.—According to Code requirements.

Standard IV.

Reading.—Sample as before. One book used. Questions on meanings put to each child.

Dictation.—The whole class wrote the passage which was dictated once by the teacher.

'Old people who talk to young ones should think of the young ones more than of themselves. If they want to gossip and grumble and let off vexed feelings, let them do it to each other. Life is very trying sometimes as age comes on, and those of the same age can understand the feelings of the age and make allowance for the groanings of the natural man. But young creatures may easily be led away by a few sad or passionate words into believing all sorts of nonsense.'

Arithmetic.—In addition to the mechanical questions set, the cards bore the problems as under :—

1. If 4 loads of coal weigh 1 ton 7 cwts. each, how many lbs. are there altogether?

2. Mary gets up at 6 o'clock and her sister at 7 o'clock. How many hours will Mary be up longer in 52 weeks?

3. How many more ounce packets may be made out of 18 cwts., than 2 stone 4 lbs?

4. If one hat cost 2s. 6d., how many for £62?

Mental Arithmetic.—These questions give a fair idea of the Mental Arithmetic of the standard, and were put by the Inspector :—

How much is 11 times 11½d? ⅔ of £1? ⅛ of £1? How many pence in 19s. 11d.?

Grammar.—'In our garden grow many kinds of lovely flowers.'

The above sentence was written on the board and the girls were required to analyse and parse it. Simple questions concerning the sentence were put, such as :—What is the subject of that sentence? The predicate? Where would you put 'in our garden'? Why is 'many' an indefinite numeral adjective?

Needlework.—This was according to Code requirements.

Standard III.

Reading.—Half the sample used one book and the other half another. No questions were put to the children.

Dictation.—The following passage was taken from a reading book and dictated once :—

'When this little boy was quite a child, he used to go in a boat with his father to fish. He knew all the rocks and channels at the time of low water, when they are most dangerous; and no doubt he had learned to steer his father's boat by the land-marks on the hills when the entrance to the harbour was out of sight.'

Arithmetic.—In addition to the mechanical tests were the following problems :—

1. If I had 8 bags, each containing 45 marbles, how many could I give to each of 10 boys?

2. What must be added to £13 16s. 0½d. to make £18?

3. There were 11 sacks, each containing 324 potatoes. In each sack were 25 bad ones. How many good ones were there altogether?

Grammar.—From a paragraph in the reading book the girls were asked to pick out nouns, verbs, pronouns, etc., after which definitions of these parts of speech were asked for and also the tense of the verbs.

Needlework.—According to Code.

Standard II.

Reading.—As in the other Standards, the Reading was judged by sample formed by teacher and Inspector as before.

Dictation.—'He played in the yard, and tried to forget what he had done, but could not. He knew that he ought to tell his mother as soon as she came home, but he was afraid, for he knew that she would be displeased. Pretty soon he went into the house.'

Arithmetic.—Five sums were given to each child—one addition sum of five lines, one subtraction, one multiplication, one division, and one problem.

Problems—

1. I had 3 packets of needles, 12 in each; 10 were taken away. How many were left?

2. A farmer had 100 sheep; 18 died, 30 were sold, and 50 were given away. How many had he left?

Mental Arithmetic.—Questions were set on pence table, such as—How many shillings in 119d.? in 91d.? in 133d.? etc.; and in the simple rules as—to 20 add 15, take away 10; to 25 add 15, half of that; 4 times 10, add 20, divide by 2; twice 18; add 30 to 30, etc., etc.

Standard I.

Reading.—A few very easy questions were put to the children forming this sample, while the Reading was proceeding.

Transcription.—'In the warm days of summer Dicky was often tempted to jump out after a big fat fly.'

Arithmetic.—The following subtraction sums were set, together with one addition :—

A.	606	B.	302
	7		7
	705		807
	609		708

Mental Arithmetic.—Questions in tables, together with the following :—

1. I had in a money-box 2s. 6d.; I gave away 6d., and 3d. and 3d. How much had I left?
2. Add together 9 + 2 + 3 + 6.
3. Take 18 from 36.
4. Take 20 from 40.
5. How many sixpences in 2s.?

Grammar.—After asking what a noun was, the Inspector held up a ruler asking if that was a noun. Why not? He then asked what nouns were made of, to which question the children, *of course*, answered 'Letters.'

Dealing, then, with the word 'noun,' he asked for the letters of which it was composed. On being told their names he asked what part of speech they were, endeavouring to get the children to say that the names of the letters also were nouns. Needless to say, his questioning was not successful.

Needlework.—According to Code.

Music.

The examination in this subject was most searching, far exceeding anything required by the Code, especially in the upper Division, the Inspector entering most minutely into the Major Scales and their Relative Minors, also requiring individual children to sing a minor third, etc., above a certain note sung by him.

The note and time tests were of an ordinary character.

INFANTS' DEPARTMENT.

STANDARD I.—GIRLS.

Beginning his work in this Department with Standard I., one-half of the class was required to read from one of the books out of the two provided. No meanings were asked for.

Arithmetic was taken with the other half class, and the following sums were set :—

639 + 463 + 11 + 406 + 5,
432 − 29, and 609 − 99.

Transcription. — Two lines taken from Reading Book : 'Frank sends you a little chair with his love.'

Sewing.—Class divided into three parts ; one part took hemming, another seaming, and another knitting. This was examined in school, but not taken away.

Singing.—The following note test was sung—

d m s d' s l f s m d f r d —

after which the Inspector sang three notes at a time for the children to imitate.

Recitation.—The piece chosen for recitation was repeated by the class simultaneously, at the conclusion of which a few questions were asked, such as : Who was Santa Claus ? Where does he live ? What is his work ? What are put in stockings ? What kind of stockings would you put up ? Why ? etc., etc.

Object Lessons.—A list of Object lessons had been prepared, and were submitted to the Inspector, but the teacher of the class was asked to question the children on the 'Tree.'

Kindergarten.—Five subjects were taken, from which the Inspector allotted various work to each child.

Classes 1 and 2.

Reading.—The Reading was interspersed by word-building. For instance, dealing with the word 'sleep,' the children were asked for the first and second letters and the sound of them, by such a question as 'How do you know the first letter is "s,"' etc., etc.

Writing.—The following letters were dictated : Capital P, Y, Z, R, V, and small p, y, z, r, v. The numbers 15, 9, 8, 13, 91.

The Inspector then asked the children to spell the word 'Merry,' after which they were told to write it.

Arithmetic.—One row of boys and one of girls were asked questions in the following manner : 8 and 8, 12 and 12, 0 and 0, 9 and 11. Two other rows had problems such as : How many halfpenny buns can be bought for 6½d ? How many boots are there in 6 pairs ?

Object Lessons.—On viewing the list presented, the Inspector questioned Class 2 on 'The Sheep,' and the teacher of Class 1 questioned on 'A Loaf of Bread.'

Kindergarten.—At the conclusion of the five occupations taken, numerous questions were asked, such as : What have you made ? Why is it so called ? etc., etc.

Singing.—From the modulator the following notes were given—**d m s d' s m s d' m d s.**

Sewing.—Half took sewing and half knitting.

Class 3.

Reading.—Books were used in this class. Only a few children were asked to read.

Writing.—The word 'Happy' commencing with a capital letter, was written in large hand on the blackboard, after which the children copied it on their slates.

Arithmetic.—Addition and subtraction sums were given to be done mentally, such as : If I have two dolls in one pocket and four in the other, how many altogether ?

Kindergarten.—Five gifts were taken. These were distributed about the class. Various questions were asked, including the following—Where do we get wire, tin, silver, lead, iron, gold ?

Drawing and Sewing.—All the girls took sewing, and the boys did drawing in the place of sewing.

Object Lesson.—After the Inspector had looked over the list he selected the subject 'A Ship,' upon which he asked a few questions.

Classes 4 and 5.

Reading.—Letters were taken from the Kindergarten Reading Sheets.

Writing.—The letters d, e, f, g, h were written on the board, and were copied by the children.

Counting.—The Inspector took this by tapping on the board, requiring the children to count audibly.

Kindergarten.—Six occupations were distributed to the class by the teacher.

Musical Drill was taken by all except the 'babies.'

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TACT
IN THE BUSINESS OF SCHOOL-KEEPING.

BY RICHARD BALCHIN.

AMONG the more prominent characters whose management demands the exercise of tact on the part of the teacher, we will now consider the case of :—

'The Inquisitive boy.'

This title does not entirely cover my meaning. The word 'curious' would be better if it bore greater precision in its signification. The lad of an inquiring 'turn of mind' is a useful acquisition in any class. If the numerous questions he puts had their origin in a real effort to get at the truth, and not in a mere idle curiosity, arising from a desire to appear different from the other lads, and so, in a manner heroic, the educator should encourage the pupil to propound his queries. The age of inquiry betokens an advance of the individual, no less than of the society. Social states pass through three periods in the course of their intellectual evolution. There is, first, the age of universal agreement, where all are equally ignorant. Most of the social aggregates of the world are at present in this primitive condition. The second stage is reached when minds begin to inquire ; this is the age of disagreements and divisions. The few civilised communities of the world find themselves at this point now. Lastly, we arrive at the second period of universal agreement—the agreement of the wise. No society has ever yet reached such a paradise in this world, though if any should do so, it would probably lead to such a stagnation of mind, that humanity, as at present constituted, would in time recur to its primitive age of ignorant agreement.

What shall we do with our inquisitive friend ? The point to be settled is, does our little questioner really

desire to know, or does he merely betray a spirit of mischief bordering on flat impertinence? If the former, then answer his question, and encourage him to ask more; for it is probably an indication that you have failed to make clear an important point in the lesson. But if you suspect the latter, then call the boy to the table, let him there repeat his question to the boys. If none of his class-mates can answer, possibly it is because the question is a foolish one. Prove that it *is* a foolish one. The lad will then feel ashamed and regret having asked it. If, on the other hand, the majority of the class *can* answer it, the propounder will see that on a certain point nearly all his companions are wiser than he is. This will make him appear publicly very small indeed, and restrain him from again wilfully placing himself in such an unenviable position. If, however, in spite of this warning, the boy should repeat his offence, and seem rather to delight in appearing singular, let him write his question and answer, say six times, telling him that he is to do this in order that he shall not soon forget, what seems to him, so important a point.

Our next type is :—

'The apparently hopelessly vile boy.'

I use the modifying term 'apparently' because there has never yet been born into this world the human being so utterly bad as to be really *hopelessly* vile. The very worst boy it has been my lot to know has yet possessed, somewhere in his gloomy nature, a faint glimmering spark of something good, which by judicious fanning, will develop into a brightness sufficient to enlighten, to some extent at least, the dark places of this unfortunate boy's soul. There comes to my mind one such boy. Seemingly he was utterly bad, and it was only by accident I discovered anything good in him. The window of my room was open, and a little girl was quietly trudging along the muddy pavement to school. A boy on passing her, deliberately knocked off her hat into the dirt. Our apparently hopeless character saw this, and roughly collaring the culprit, shouted out 'What did you do that for? She can't fight you, can she?' Then after administering two or three 'punches' he released his subject. But mark what followed! This boy, whom I had almost given up, took a rag from his pocket, tenderly wiped the tears away from the child's face, scraped the dirt off the hat with his knife, replaced it upon her head, and stooping over the yet throbbing little creature, kissed all its grief away!

In school, however, this boy gives no end of trouble. He is in many respects like the primitive savage: a remarkable mixture of opposites. His character discloses a strange group of contradictories. Notwithstanding the above recorded acts of negative and positive goodness, he is often sulky, odstinate, impudent, untruthful, idle, and frequently very brutal. He is, however, seldom hypocritical. He has a certain dim conception that it is quite right to be manly, and quite wrong to be a sneak. Of course he smokes, or tries to do so, when out in the street, giving an extra strong puff when he sees other small boys passing by him. This, however, arises merely from a desire to be like 'other men.'

How shall this boy be treated? I would say first lay hold upon his desire to be manly, and endeavour to lead him to form a *true* conception of manliness, and make it plain to him that most of the objectionable features in his character are the very opposites of manliness. Whenever you find him doing a really brave act, such as the one described, be sure and praise him for it, telling him that 'this is a part of true manliness.' Give him to understand that if at any time he sees a little boy illtreated by a bigger one, he is to take the part of the former, and administer a thrashing to the latter. By this mode of management you will secure two very valuable results. First, our apparently hopeless one will feel that he holds in the school the important position of champion of the 'weak', and universal redresser of 'wrongs'; a veritable Don Quixote. Second, he will realize that he is entirely in your confidence; and will firmly believe, that although you, as the master, may think you have the management of the school in your own hands, yet, as a matter of fact, a large share of the management falls upon him; furthermore, so strong is his sense of the responsibility thrown upon him, that if he relaxed his watchfulness the school would suffer very seriously. Of course, if this boy, being in your confidence, yet betrays his trust and does something which offends, he must be punished; but I should not punish him before the others, from a fear lest he should begin to entertain the idea of heroism in pluckily bearing pain. If this lad *will* play the 'hero,' let it be in the defence of the weak, rather than in the performance of crime.

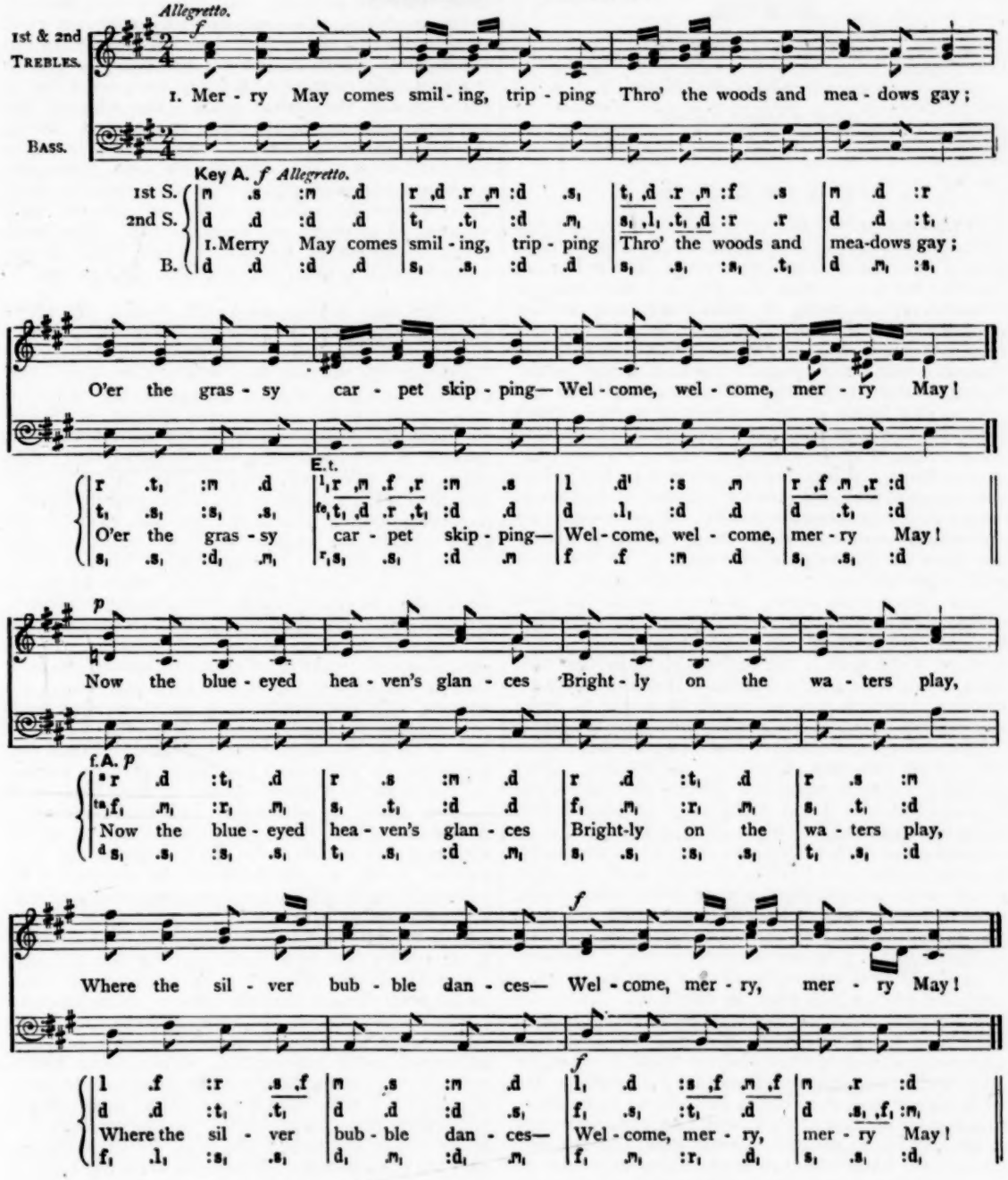
'The impudent, sulky boy.'

This lad is in the habit of being rude and impudent to his mother at home; and the father has allowed the habit to grow. In all probability he is the only boy, and has two or three sisters. These make much of him, wait upon him, pander to his fancies, and although they are his seniors, yet he orders them about; he does this, in fact, to his mother. At the age of twelve or thirteen he buys a walking stick and struts about with it. Of course he smokes cigarettes and gives himself 'airs,' is very conceited, and often 'in the sulks.' These fits arise whenever he feels that he is not treated with becoming respect and deference.

Now what shall the educator do with this ridiculous little creature? The first time he is impudent to you in the class the other lads will probably laugh at him; you laugh also. Let him see that everybody regards his conduct as so utterly absurd, as to be quite comic and exciting mere laughter. This he will greatly dislike; for *he* has always regarded his rude chatter as being something very weighty and serious. The next time he is impudent, a different course must be pursued. Tell the boys that he has intended to insult you. Say that he is far too unimportant a child to *really* insult, but such was his intention. Ask the lads whether they consider it right that you should be insulted. No! Well then the criminal must be punished. Now *this* is just one of the many cases in which the assistant should undoubtedly have the power to inflict a caning in his own hands. But he is not allowed to do so. He must call in the Head; so half the educational value of the punishment is lost, and the assistant's personal influence for good seriously damaged. Really I feel a burning and inexpressible indignation when I see the wretched and shameful position in which our experienced and able assistants are placed.

Fits of sulks must be treated exactly in the same way as impudence, which, in fact, is just what they are.

MERRY MAY!


Allegretto.
1st & 2nd TREBLES.
BASS.
1. Mer - ry May comes smil - ing, trip - ping Thro' the woods and mea - dows gay;
Key A. f Allegretto.
1st S.
2nd S.
B.
1. Merry May comes smil - ing, trip - ping Thro' the woods and mea-dows gay;
O'er the gras - sy car - pet skip - ping— Wel - come, wel - come, mer - ry May!
E.t.
O'er the gras - sy car - pet skip - ping— Wel - come, wel - come, mer - ry May!
p
Now the blue - eyed hea - ven's glan - ces Bright - ly on the wa - ters play,
f.A. p
Now the blue - eyed hea - ven's glan - ces Bright-ly on the wa - ters play,
f
Where the sil - ver bub - ble dan - ces— Wel - come, mer - ry, mer - ry May!
f
Where the sil - ver bub - ble dan - ces— Wel - come, mer - ry, mer - ry May!

2. Birds in sweetest song united
Warble on the blooming spray;
How they charm the ear delighted—
Welcome, welcome, merry May!
And the plant, throughout the hours
Of the bright and gladsome day,
Tells its joy in beauteous flowers—
Welcome, merry, merry May!

3. Through the mead the streamlet straying
Murmurs music on its way,
With the bright-eyed flowers playing—
Welcome, welcome, merry May!
While all nature thus to meet her
Joins in one harmonious lay,
Let us also sing to greet her,
Welcome, merry, merry May!

COMMON-SENSE LESSONS IN EVERY DAY HOUSEWORK.

BY MRS. E. A. SHARMAN,

Lecturer to the National Health Society,

Author of 'Family Cookery.'

Occasional Cleaning.

Whitewashing.—It is a very busy time in a home when spring-cleaning commences. A clever girl will be wanted here and there and everywhere; she will have a good chance of testing her practical knowledge in housewifery, and being of considerable help to her mother. To be a thoroughly good housekeeper, one must know how to do *everything* about a house, and there is nothing in a cottage home that a girl cannot undertake if she is willing. Whitewashing walls and ceilings of a house is often considered to be a man's work, but it is a mistake, for it is really simple work to do, and repays the trouble of learning by its sweetness and freshness. When men do such work they splash about a great deal, and give any amount of trouble to clean paints and floors afterwards. Women and girls are more tidy and careful in doing the work, and as they have the cleaning up afterwards of all the mess made, they take more pains not to splash about. It is also a considerable saving to one's income, as men charge high for such services. In learning to whitewash, do not attempt too much at first, and so tire yourself of the work in the beginning. It is not hard work, but is a tax on the muscles of one arm. Whitewashing cupboards is quite enough for a girl to begin and practise upon. If she undertook to keep the larder cupboard sweet and clean, it would be good preparation towards whitewashing the scullery and kitchen. After she has learnt to do these well she can then undertake bedroom ceilings. I once knew a girl of sixteen who could whitewash any cottage ceiling in thirty minutes, without splashing twenty drops. I learnt to whitewash from watching her. It looks very easy work smearing a wall with whitewash, but it is not so easy really, until the proper way of handling the brush has been learnt, and one has had some little practice. Whitewashing ceilings is especially trying at first. The work is important from a sanitary point of view, but is often neglected when a man must be employed. There are two common mistakes likely to be made when first attempting to whitewash, viz., covering dirt over with whitewash, and using whitewash too thick. A girl might often find an opportunity of watching a plasterer and whitewasher at work in empty houses, and by carefully noticing his method of work, would see the consistency of the whitewash, the sort of brush used, and the firm position he takes when at work. The only way to remove dirt from walls and ceilings is first to sweep off as much as possible, then wash off what is left with a brush and clean cold water, letting the walls dry before beginning to whitewash. When the wash is mixed too thick, the work will look rough and irregular when dry. Do not be alarmed if you notice defects and stains while the work is wet, but be careful to leave the finishing strokes in straight lines, and the work will be sure to dry even and smooth.

To Prepare Whitewash.—It will be a saving of time and trouble to mix as much wash as will be wanted to finish the work in hand. Mix one pound, or more, of common whiting in a clean pail, with sufficient warm water to make it a thin paste, add half a pound of size which has first been melted in a saucepan over the fire, and colour the mixture with a tablespoonful or two of liquid blue to the desired shade. The whiting, size, and liquid blue can be bought at any oilshop. Strain the wash through a piece of coarse canvas, or a fine sieve, and when cold it is ready for use. Sometimes a tablespoonful of ground alum is mixed into the wash. This whitewash mixture spoils no utensils used, whether of earthenware, wood or zinc. The brush ought to be soaked for two or three hours in cold water before it is used, and especially if a new one.

To Prepare Colour-wash.—If, instead of whitewashing, you prefer to colour the walls and ceiling a delicate tint, the colour you decide to use can be bought at the oilshop, and will involve little extra trouble. It is preferable for cottage homes to putting on a common wall-paper, as being cheaper and cleaner. Purchase about one pound of any of the following colours, viz:—Brunswick green, Venetian red, yellow ochre, rose pink, etc., mix it into the whitewash instead of adding liquid blue. Stir it well in, and add in small quantities at a time; you will thus get the exact shade you require without much trouble. Colour-wash does not become dirty so soon as whitewash. If you keep a little of the colour by you, it would then be ready for use in renovating dirty parts, especially near the sink of a scullery, where the wall quickly gets dirty, and often needs washing. It is a great disappointment when trying to match colour, to find the oilman sold out of the particular shade you require. If you purchase at another shop what you suppose to be the same colour, you will often find it to be no match when applied. When first beginning to whitewash you must prepare yourself for the work, and guard against damage likely to be done to furniture, wall-paper, etc., which cannot be moved out of the room. In doing a ceiling, all pictures must be removed, and if the room is not to be papered afresh, no splashing can be allowed or the paper will be spoilt, as it is not always easy to clean whitewash off wall-paper without spoiling the colours. Old newspapers ought to be tacked on the walls, close to the work; then by exercising a little care, and using a good brush, you will not make much mess. Wear an old *print* dress, if possible, when at work, because it can be washed afterwards; cover your hair; and place the steps you are going to stand upon in a firm position, so that you may not fall. When doing kitchen or scullery, nothing is better to stand upon than a strong kitchen table having the four legs at the corners, tables with flaps being unsafe. Cover the table with brown paper, and it will not need so much cleaning after the work is done. When you are ready to begin, stand the wash near to you, use a perfectly clean brush, dip it half-way up the bristles in the wash, dab it gently against the sides of the pail to remove superfluous wash, and prevent it dropping about. A broad, flat brush—sold on purpose—is the best to use; work it backwards and forwards evenly over the ceiling, or up and down the walls, finishing off by drawing the brush along in straight lines to smooth the colour down. It is better to do the work in small portions,

or as much as can be conveniently reached, until the whole surface has been gone over. Take care to keep the fresh part of the work nicely joined to that which has been done. Get the work done as quickly as possible, but taking care to do each part well before moving on to another. Remember that you will have to clean up all the splash you make while working. The quicker whitewash can be laid on the better the result. A large ceiling is more difficult to keep smooth and even than a small one. Sometimes two brushes are needed when doing a ceiling; one should be small and round for cleaning corners and carved work.

To Limewash.—There is nothing better than limewash for houses in crowded neighbourhoods. It is a good disinfectant, and has a much sweeter smell than whitewash. It is made by putting freshly-burned *quicklime* into a pail, and pouring as much cold water over it as covers it. Let it stand for an hour or two, then thin it with more water, and to each gallon of wash add one pint of boiled linseed oil to prevent the lime from rubbing off when dry. Great care is needed in applying the wash. Splashes made upon paints or floors can scarcely be washed off if allowed to become dry. You should have a pail of warm, soapy water, with flannel, at hand, and wash the woodwork and floor immediately you have finished each portion of limewash. The brush will be quite spoilt if left standing in the wash after the work is done. Rain does not destroy limewash, so that it is an excellent preparation for keeping outdoor passages and walls clean, especially if mixed with skim milk.

MODEL ANSWERS TO THE QUESTIONS SET AT THE LONDON MATRICULATION EXAMINATION.

JANUARY 11 to 15, 1892.

LATIN.

Monday, 2 to 4.

Examiners—PROFESSOR ARTHUR PALMER, M.A., LL.D. PROFESSOR J. S. REID, ESQ., Litt. D., M.A.

I. CAESAR: *Gallic Wars*, V. and VI.

Translate into English:—

A.

Civitati porro hanc fuisse belli causam, quod repentinae Gallorum coniurationi resistere non potuerit. Id se facile ex humilitate sua probare posse, quod non adeo sit imperitus rerum, ut suis copiis populum Romanum superari posse confidat. Sed esse Galliae commune consilium: omnibus hibernis Caesaris oppugnandis hunc esse dictum diem, ne qua legio alterae legioni subsidio venire posset. Non facile Gallos Gallis negare potuisse, praesertim cum de recuperanda communi libertate consilium initum videretur. Quibus quoniam pro pietate satisfecerit, habere nunc se rationem officii pro beneficiis Caesaris: monere, orare Titurium pro hospitio, ut suae ac militum saluti consulat. Magnam manum Germanorum conductam Rhenum transisse; hanc adfore biduo. Ipsorum esse consilium, velintne prius, quam finitumi sentiant, eductos ex hibernis milites aut ad Ciceronem aut ad Labienum deducere.

(From the speech of Ambiorix.)—Now his state had had a reason for fighting in the fact that it was unable to make a stand against the sudden coalition of the Gauls. He could readily prove this from the poverty of his own resources, for he was not so inexperienced as to expect that the Roman people could be overcome by any forces of his. No; it was a general movement of all Gaul: that very day had been appointed for an attack upon each of Caesar's winter stations, that it might be impossible for one legion to come to the help of another. It had not been easy for Gauls to give a refusal to Gauls, especially when it seemed that the movement had been entered upon in the hope of recovering the general freedom. But having already met the claims of his countrymen on the ground of duty, he was now taking account of his obligation for Caesar's acts of kindness; he warned, he implored Titurius, in consideration of their old friendship, to take measures for the safety of himself and his soldiers. A large force of Germans had been hired, and had crossed the Rhine; it would be upon them in two days. It was for the Romans to consider whether they would lead their soldiers out of the winter camp before the neighbouring tribes heard the news, and march them away to Cicero or to Labienus. (V. 27.)

B.

Cicero, qui per omnes superiores dies praeceptis Caesaris cum summa diligentia milites in castris continuisset ac ne calonem quidem quemquam extra munitionem egredi passus esset, septimo die diffidens de numero dierum Caesarem fidem servaturum, quod longius progressum audiebat neque ulla de reditu eius fama adferebatur, simul eorum permotus vocibus, qui illius patientiam paene obsessionem appellabant, siquidem ex castris egredi non liceret, nullum eiusmodi casum expectans, quo novem oppositis legionibus maximoque equitatu dispersis ac paene deletis hostibus in milibus passuum tribus offendi posset, quinque cohortes frumentatum in proximas segetes mittit, quas inter et castra unus omnino collis intererat.

Cicero, acting on the instructions of Caesar, had been very careful to keep his soldiers within the camp during all the previous days, and had not allowed even a servant to pass beyond the fortifications; but hearing rumours that Caesar had advanced still further, and receiving no report of his return-march, he began to be less confident that he would keep his promise about the number of days. He was also influenced by the remarks of those who said that his inactivity was very like a state of siege, since indeed they were not allowed to leave the camp; and on the seventh day, expecting no such mischance as that a reverse could happen within the space of three miles, when he had nine legions and numerous cavalry to bring against an enemy scattered and almost annihilated, he sent five cohorts to forage in the nearest cornfields, between which and the camp only one hill intervened. (VI. 36.)

II.—Questions.

1. Explain the following phrases, viz.:—*Primum pilum ducere, sacramento rogare, prioris commeatus milites, suggestus, testudo, ambacti.*

Primum pilum ducere: to lead the first *pilus*, to be *primipilus* of the first cohort, to be centurion of the first maniple of the first cohort.

Pilus was the first maniple of each cohort, *primus pilus* the first maniple of the first cohort of a legion. (VI. 38.)

Sacramento rogare: to ask by means of the *sacramentum*, to enlist troops by administering the military oath of allegiance to the general. (VI. 1.)

Prioris commeatus milites: the soldiers of the first passage. There were two transportations of troops from Britain to Gaul. If *prioris commeatus* be taken with *militibus* (in V. 23), it is a genitive of description. The original meaning of *commeatus*, from *meare, to go*, was *a passing to and fro.*

Suggestus: a heaping-up (*sub-gero*); the raised platform from which the soldiers were addressed in camp. It stood next the *praetorium*, in the *forum* of a Roman camp.

Testudo: the tortoise; in military language (1) a covering for a besieging party, a shed made of wood, which was pushed forward to the walls; or, (2) a close formation of a besieging party in which the soldiers held their shields over their heads.

Ambacti: a word of Keltic or Teutonic origin, meaning *vassals, dependents upon a lord.* They seem to have been the hired mounted servants of the Gallic nobles. (VI. 15.)

2. Show what districts were occupied by the following tribes, viz:—*Aedui, Senones, Treveri, Sequani, Remi, Arverni, Nervii;* and mention any modern geographical names connected with any of these.

Aedui: between the *Liger* (Loire) and the *Arar*, Departements de la Côte d'Or, de la Nièvre, de Saône et Loire, et du Rhône.

Senones: between the *Sequana* (Seine) and the *Liger* (south of Paris). Their chief town was *Agedincum*, or *Agedincum Senonum*, the genitive only surviving in the modern *Sens*.

Treveri: between the forest of Ardennes and the *Mosella* (Moselle); also west of the Moselle, past Trèves (*Augusta Trevererorum*), which preserves the name of the tribe.

Sequani: between the Arar and Mount Jura. The name means 'dwellers on the *Sequana*' (Seine), which rose in their territories.

Remi: on the *Matrona* (Marne) and *Axona* (Aisne), in the neighbourhood of *Rheims* (*Durocortorum Remorum*), which preserves the name of the tribe.

Arverni: in the present *Auvergne*, which preserves the name of the tribe.

Nervii: about the *Sabis* (Sambre), between the *Scaldis* (Scheldt) and the *Mosa* (Meuse).

3. Give, very briefly, the substance of Caesar's account of the Druids.

Among the Gauls there were, besides the serfs, only two classes—the Druids and the knights. The Druids were the national priests. Their ranks were filled by those who, as young men, had offered for the priesthood, and had undergone the appointed training for many years. Druidical studies were chiefly *memoriter;* they committed nothing to writing. They gave attention to astronomy, geography and natural history. They taught that souls did not die, but passed from one to another.

In questions of state and in the disputes of individuals the Druids had great authority; they judged offences against morality, and held the terrible power of excommunication. They believed in gods and burned human sacrifices to them. There was one chief Druid, whose place in case of a disputed succession was filled by election. All Druids were exempt from military service and the payment of taxes.

The home of the system had been Britain; thence it extended to Gaul, where, on a sacred site in the territory of the Carnutes, the Druids used to hold a sort of annual parliament, the only representative assembly of Gaul.

4. To what parts of Britain did the Romans penetrate during Caesar's second expedition? Mention some erroneous ideas entertained by Caesar about the rest of the island.

After effecting a landing, probably near Deal, Caesar pushed inland to a river, which was probably the Great Stour. Marching westward through the territory of the Cantii, the men of Kent, he crossed the Thames somewhere near Walton, and then turned north-east, in pursuit of Cassivelaunus, whose stronghold, probably Verulamium (St. Albans), was the furthest point of the invasion.

(1) Nascitur ibi plumbum album in mediterraneis regionibus. The tin-mines were not in the inland districts, but in Cornwall.

(2) Insula natura triquetra. Caesar represents Britain as triangular, one side facing the south-east and Gaul, another the west and Spain, and the third looking northward.

5. What were the functions of the *quaestor*, the *legatus*, and the *tribunus militum?* How were they appointed to their posts?

The *quaestor* was properly a civil officer, attached to the general, regarded as governor of the province assigned to him. The quaestor at first had only to superintend the sale of the booty, but in later times he kept the funds of the army, and gave the soldiers their pay. He was paymaster and adjutant-general. Quaestors were elected by the Comitia Tributa.

The *legatus* was a general on the commander's staff. He was usually a man of great military talents. Separate expeditions and commands were entrusted to legati, and whenever the commander was absent from the army, the legati, or one of them, took his place. The appointments were made by the Senate, on the nomination of the general.

The *tribunus militum* kept the roll-call, ordered the camp, superintended the military exercises of the soldiers, inspected outposts and sentinels, procured provisions, settled disputes among the soldiers, and had general charge of the discipline of the troops. There were six of these officers in a legion, and they took duty in turn, one at a time. The twenty-four required for an ordinary levy of four legions were elected (after 207 B.C.) by the people. If more than four legions were raised the commander nominated the tribunes of the extra legions.

III.—Translate *two* of the following passages: *i.e., one* of the prose passages, and *one* of the verse passages.

A.

Heu quantum timuere patres, quo tempore Vesta
Arsit, et est adytis obtruta paene suis!
Flagrabant sancti sceleratis ignibus ignes,
Mixtaque erat flammae flamma profana piae.
Attonitae flebant demisso crine ministrae:
Abstulerat vires corporis ipse timor.
Provolat in medium, et magna, 'Succurrite!' voce,
'Non est auxilium flere' Metellus ait.

Alas, what fear the fathers felt, in the day when Vesta was in flames and well nigh perished in her own holy place. Her hallowed fires with impious fires were burning, and with holy flames unblessed flames were blended. Her maidens with hair dishevelled, wept in helpless horror, sheer dread had reft them of their strength. Into their midst Metellus sprang and cried, 'To the rescue, all, weeping does not avail!' (Ovid, Fasti, VI.)

B.

Nate mihi longa iocundior unice vita,
Nate, ego quem in dubios cogor dimittere casus,
Reddite in extrema nuper mihi fine senectae,
Quandoquidem fortuna mea ac tua fervida virtus
Eripit invito mihi te, cui languida nondum
Lumina sunt nati cara saturata figura,
Non ego te gaudens laetanti pectore mittam,
Sed primum multas expromam mente querelas.

My son, my only son, sweeter to me than length of days, restored so late to me in the last close of age, whom now I must let go to meet life's doubtful chances, for that my fortune and thy throbbing valour take thee from my unwilling arms—from me whose feeble eyes are not yet sated with my son's dear form, joyless and with no gladsome heart shall I be sending thee, but first shall give full utterance to my soul's complainings. (Laurea Tullius?)

C.

Sub hanc vocem ex omnibus partibus contionis clamor oritur, nullam earum vivere debere, nec quemquam superesse tyrannorum stirpis. ea natura multitudinis est: aut servit humiliter aut superbe dominatur; libertatem, quae media est, nec cupere modice nec habere sciunt. et non ferme desunt irarum indulgentes ministri, qui avidos suppliciorum animos ad sanguinem et caedes irritent, sicut tum extemplo praetores rogationem promulgarunt, acceptaque paene prius quam promulgata est, ut omnes regiae stirpis interficerentur.

Immediately upon this declaration, shouts arose from all parts of the assembly that none of the women deserved to live, and not one of the tyrants' race should be spared. Such is the nature of the mob: either they obey abjectly or they rule insolently. Liberty, which is the mean, they cannot desire with moderation, nor keep when it has been obtained. And, as a rule, there are not wanting men to indulge and minister to their passions, to provoke to bloodshed and massacre hearts eager for vengeance—as was the case on this occasion. The praetors forthwith proposed a bill, a bill which was accepted almost before it was proposed, that all members of the royal family should be put to death. (Livy, XXIV.)

D.

Themistocles post victoriam eius belli, quod cum Persis fuit, dixit in contione se habere consilium rei publicae salutare, sed id sciri non opus esse: postulavit ut aliquem populus daret quicum communicaret. Datus est Aristides. Huic ille, classem Lacedaemoniorum, quae subducta esset ad Gytheum, clam incendi posse, quo facto frangi Lacedaemoniorum opes necesse esset. Quod Aristides cum audisset, in contionem magna exspectatione venit dixitque perutile esse consilium quod Themistocles adferret, sed minime honestum.

After his victory in the war with the Persians, Themistocles announced in a public assembly that he had a plan which concerned the welfare of the state, but it was not desirable that it should be known; he asked the people to appoint someone to whom he might divulge it. Aristides was appointed. Themistocles explained to him that it would be possible without discovery to set fire to the Lacedaemonian fleet, which had been beached at Gytheum. After hearing this, Aristides entered the assembly amid great expectation, and said that it was a very good plan that Themistocles proposed, but not a very honourable one. (Cic. de Off. III.)

LATIN GRAMMAR AND COMPOSITION.

Monday, 4 to 6.

Examiners—PROFESSOR ARTHUR PALMER, M.A., LL.D.
J. S. REID, ESQ., LITT.D., M.A.

1. Decline in combination, in the singular, *totum pelagus;* and, in the plural, *ingens opus* and *dies felicior.*

N., V., Acc.	*totum*	*pelagus*
Gen.	*totius*	*pelagi*
Dat.	*toti*	*pelago*
Abl.	*toto*	*pelago*
N., V., Acc.	*ingentia*	*opera*
Gen.	*ingentium*	*operum*
Dat.	*ingentibus*	*operibus*
Abl.	*ingentibus*	*operibus*
N., V., Acc.	*dies*	*feliciores*
Gen.	*dierum*	*feliciorum*
Dat.	*diebus*	*felicioribus*
Abl.	*diebus*	*felicioribus*

2. Write down the supine in *-um* of *occīdo, occĭdo, texo, sepelio;* the infinitive present passive of *cupio, vincio, lēgo;* and the perfect indicative, active, first person singular, of *pergo, intelligo, lacesso.*

(*a*) *Occīsum, occāsum, textum, sepultum;*

(*b*) *Cupi, vinciri, lēgari;*

(*c*) *Perrexi, intellexi, lacessivi* or *lacessii.*

3. What are the different meanings of *labor, fugi, placet, manet, aret,* when the first syllables are (1) long, and (2) short?

lābor, I glide; *lăbor,* labour.

fūgi, I fled, have fled, or avoided; *fŭgi,* to be avoided.

plăcet, let him pacify, she may appease, etc.;
plācet, he, she, or it pleases.

mănet, let it flow, it may emanate, etc.;
mānet, he, she, or it remains.

ăret, it is dry; *āret,* he may plough, let her plough, etc.

4. What *prepositions* would you use to express the *words in italics* in the following sentences? (Do not translate the whole sentence):—

(*a*) This is not *for the interest of* the state.

(*b*) Poor *in* spirit.

(*c*) Who is *on* my side?

(*d*) He was nothing *compared with* Cicero.

(*e*) Gentle *to* all.

Answer:—

(*a*) *e.*

(*b*) *a*—If a preposition must be used (rather than a simple ablative).

(*c*) *a* (with the personal pronoun).

(*d*) *ad, prae.*

(*e*) *erga, in.*

5. Correct *all* the faults in the following:—

(*a*) *Indignus est qui credatur.*

(*b*) *Improbus quoque tu es.* (You, too, are a villain.)

(*c*) *Tum veni ad Romam ut aedem Ciceronis videam.* (Next I came to Rome in order that I might see Cicero's house.)

(*d*) *Rogavi quantos famulos cumse adduxerat.* (I asked how many servants he had brought with him.)

(*e*) *Nil mihi refert, ubi asinum perdidistis.*

Answer:—

(*a*) *Indignus est cui credatur.*

(*b*) *Tu quoque improbus es.*

(*c*) *Deinde Romam veni ut Ciceronis aedes viderem.*

(*d*) *Rogavi quot famulos secum adduxisset.*

(*e*) *Nil mea refert, ubi asinum perdideritis.*

6. Construct sentences of your own introducing (*a*) an impersonal passive verb; (*b*) a double dative; (*c*) a genitive of quality; (*d*) an accusative of respect; (*e*) an ablative of price.

(*a*) *Satis fiet a nobis, neque parcetur labori.* (We will give satisfaction, and no labour shall be spared.)

(*b*) *Vitis arboribus decori est.* (The vine is a grace to trees.)

(*c*) *Tuae litterae maximi sunt apud me ponderis.* (Your letters are of the greatest weight with me.)

(*d*) *Os humerosque deo similis.* (In face and shoulders like a god.)

(*e*) *Magno illi ea cunctatio stetit.* (That hesitation cost him dearly.)

7. Translate five (but not more than five) of the following sentences into Latin:—

(i) It is not everyone who can face danger with calmness.

(ii) Can you not govern your tongue for one single hour?

(iii) Brutus denied that he was sorry for having slain Caesar.

(iv) Would that I had died before that I had seen the city burnt and the temples plundered by the enemy!

(v) Caesar sent fifty soldiers to break down the bridge, with the object of preventing the Gauls from crossing the river by night and attacking his camp.

(vi) It is difficult to understand how it happens that so few are content with their lot, and make it their business to enjoy life wisely.

(vii) He offered me money when I did not ask for it, and did not want it; now, when I do want it, and beg for it, I fear he will not give me a penny.

(viii) Æmilia, naturally of a gay and lively disposition, was so saddened by the death of her husband, that you would not know her for the same person.*

(i.) *Non possunt omnes pericula aequo animo obire.*

* Is this good English?

(ii.) *Nonne linguae tuae unam horam temperare potes?*

(iii.) *Brutus negavit se paenitere quod Caesarem interfecisset.*

(iv.) *Utinam ante periissem quam urbem incensam templaque direpta ab hostibus vidissem.*

(v.) *Caesar milites quinquaginta misit qui pontem rescinderent ne Galli flumine noctu transito castra oppugnarent.*

(vi.) *Vix intellegi potest qui fiat ut tam pauci sorte sua contenti vitae sapienter fruendae studeant* (or *operam dent ut sorte sua contenti sapienter vita fruantur.*)

(vii.) *Mihi neque roganti neque egenti pecuniam obtulit; nunc vereor et egenti et obsecranti ut unum assem daturus sit.*

(viii.) *Aemilia, ingenii ipsa festivi hilarisque mulier tantum dolorem viro suo mortuo concepit ut non eandem esse putares.*

GREEK.

Tuesday, 10 to 1.

Examiners—R. D. HICKS, ESQ., M.A.
G. E. MARINDIN, ESQ., M.A.

I. *Translate into English:—*

A.

Ω πόποι, ἦ μάλα δὴ φίλου ἀνέρος υἱὸς ἐμὸν δῶ
Ἰκεθ', ὅς εἵνεκ' ἐμεῖο πολέας ἰμάγησεν ἀέθλους·
καί μιν ἔφην ἐλθόντα φιλησέμεν ἔξοχον ἄλλων
Ἀργείων, εἰ νῶϊν ὑπείρ ἅλα νόστον ἔδωκεν
νηυσὶ θοῇσι γενέσθαι Ὀλύμπιος εὐρύοπα Ζεύς.
καί κε οἱ Ἄργεϊ νάσσα πόλιν καὶ δῶματ' ἔτευξα,
ἐξ Ἰθάκης ἀγαγὼν σὺν κτήμασι καὶ τέκεϊ ᾧ
καὶ πᾶσιν λαοῖσι, μίαν πολιν ἐξαλαπάξας,
αἳ περιναιετάουσιν, ἀνάσσονται δ' ἐμοὶ αὐτῷ.
καί κε θάμ' ἐνθάδ' ἐόντες ἐμισγομεθ'· οὐδέ κεν ἡμέας
ἄλλο διέκρινεν φιλέοντέ τε τερπομένω τε,
πρίν γ' ὅτε δὴ θανάτοιο μέλαν νέφος ἀμφεκάλυψεν.
ἀλλὰ τὰ μέν που μέλλεν ἀγάσσεσθαι θεὸς αὐτὸς,
ὅς κεῖνον δύστηνον ἀνόστιμον ὧδε ἔθηκεν.
Ὣς φάτο, τοῖσι δὲ πᾶσιν ὑφ' ἵμερον ὦρσε γόοιο.

'Lo now, in good truth there has come unto my house the son of a friend indeed, who for my sake endured many adventures. And I thought to welcome him on his coming more nobly than all the other Argives, if but Olympian Zeus, of the far-borne voice, had vouchsafed us a return over the sea in our swift ships,—that such a thing should be. And in Argos I would have given him a city to dwell in, and stablished for him a house, and brought him forth from Ithaca with his substance and his son and all his people, making one city desolate of those that lie around, and are in mine own domain. Then ofttimes would we have held converse here, and nought would have parted us, the welcoming and the welcomed,* ere the black cloud of death overshadowed us. Howsoever, the god himself, methinks, must have been jealous hereof, who from that hapless man alone cut off his returning.'

So spake he, and in the hearts of all he stirred the desire of lamentation.† (Od. IV. 169—183.)

B.

Τὸν μὲν ἐπὴν δὴ πρῶτα κατευνηθέντα ἴδησθε,
καὶ τόν' ἔπειθ' ὑμῖν μελέτω κάρτος τε βίη τε
αἴθι δ' ἔχειν μεμαῶτα καὶ ἐσσύμενόν περ ἀλύξαι.
πάντα δὲ γιγνόμενος πειρήσεται, ὅσσ' ἐπὶ γαῖαν
ἑρπετὰ γίγνονται καὶ ὕδωρ καὶ θεσπιδαὲς πῦρ·
ὑμεῖς δ' ἀστεμφέως ἔχέμεν μᾶλλόν τε πιέζειν.
ἀλλ' ὅτε κεν δὴ σ' αὐτὸς ἀνείρηται ἐπέεσσιν,
τοῖος ἐὼν οἷόν κε κατευνηθέντα ἴδησθε,
καὶ τότε δὴ σχέσθαι τε βίης λῦσαί τε γέροντα,
ἥρως, εἴρεσθαι δὲ θεῶν ὅστις σε χαλέπτει,
νόστον θ', ὡς ἐπὶ πόντον ἐλεύσεαι ἰχθυόεντα.

'So soon as ever ye shall see him couched, even then mind you of your might and strength, and hold him there, despite his eagerness and striving to be free. And he will make assay, and take all manner of shapes of things that creep upon the earth, of water likewise, and of fierce fire burning. But do ye grasp him steadfastly and press him yet the more, and at length when he questions thee in his proper shape, as he was when first ye saw him laid to rest, then, hero, hold thy strong hands, and let the ancient one go free, and ask him which of the gods is hard upon thee, and as touching thy returning, how thou mayest go over the teeming deep.'* (Od. IV. 414—424.)

C.

νῆα μὲν οὖν πάμπρωτον ἀλὸς βένθοσδε ἕρυσσαν,
ἐν δ' ἱστόν τ' ἐτίθεντο καὶ ἱστία νηὶ μελαίνῃ,
ἠρτύναντο δ' ἐρετμὰ τροποῖς ἐν δερματίνοισιν
[πάντα κατὰ μοῖραν· ἀνά θ' ἱστία λευκὰ πέτασσαν]
τεύχεα δέ σφ' ἦνεικαν ὑπέρθυμοι θεράποντες.
ὑψοῦ δ' ἐν νοτίῳ τὴν γ' ὥρμισαν, ἐν δ' ἔβαν αὐτοί·
ἔνθα δὲ δόρπον ἕλοντο μένον δ' ἐπὶ ἕσπερον ἐλθεῖν
Ἡ δ' ὑπερωΐῳ αὖθι περίφρων Πηνελόπεια
κεῖτ' ἄρ' ἄσιτος, ἄπαστος ἰδηύοις ἠδὲ ποτῆτος,
ὀρμαίνουσ' εἴ οἱ θάνατον φύγοι υἱὸς ἀμύμων,
ἦ δ γ' ὑπὸ μνηστῆρσιν ὑπερφιάλοισι δαμείη.
ὅσσα δὲ μερμήριξε λέων ἀνδρῶν ἐν ὁμίλῳ
δείσας, ὁππότε μιν δόλιον περὶ κύκλον ἄγωσιν,
τόσσα μιν ὀρμαίνουσαν ἐπήλυθε νήδυμος ὕπνος·
εὗδε δ' ἀνακλινθεῖσα, λύθεν δέ οἱ ἄψεα πάντα.

So first of all they drew the ship down to the deep water, and placed the mast and sails in the black ship, and fixed the oars in leathern loops all orderly, and spread forth the white sails. And squires, haughty of heart, bare for them their arms. And they moored her high out in the shore water, and themselves disembarked. There they supped and waited for evening to come on.

But the wise Penelope lay there in her upper chamber, fasting and tasting neither meat nor drink, musing whether her noble son should escape death, or even fall before the proud wooers. And as a lion broods all in fear among the press of men, when they draw the crafty ring around him, so deeply was she musing when deep sleep came over her. And she sank back in sleep, and all her joints were loosened.† (Od. IV. 780—794.)

II. Grammatical Questions:—

(i) Write down the *genitive singular* and *accusative plural* of ἥρως, κρέας, νομεύς, σπέος, κλείς; parse εὐνῇφι; decline ναῦς throughout in Attic and Ionic.

ἥρως: ἥρωος, ἥρωας (also ἥρως in Attic).

κρέας: κρέως, κρέατα and κρέα (more frequent in Homer).

νομεύς: νομέως and νωμῆος (poet.), νομέας, νομεῖς and νωμῆας (Homer).

σπέος: In Homer the only gen. sing. is σπείους (nom. σπεῖος); the acc. pl. is wanting.

κλείς: κλειδός, κλεῖδας and κλεῖς. Homer uses only the forms from κληῖς—κληῖδος and κληῖδας.

εὐνῇφι: Epic genitive or dative, singular or plural, of the noun εὐνή; in Homer always genitive with ἐξ.

ναῦς: Attic: N. ναῦς Ionic: νηῦς, νηός, νεός.
V. ναῦ —
Acc. ναῦν νῆα, νέα.
Gen. νεώς νηός, νεός.
Dat. νηΐ νηΐ.

N.V.A. νῆε —
G.D. νεοῖν νεοῖν.

NV. νῆες νῆες, νέες.
Acc. ναῦς νῆας, νέας.
Gen. νεῶν νηῶν, νεῶν.
Dat. ναυσί νηυσί, νήεσσι, νέεσσι.

* Messrs. Butcher and Lang adopt the suggestion of Mr. Evelyn Abbott, that φιλέοντε and τερπομένω are here correlatives, and denote respectively the parts of host and guest. Taken in the usual way, the words would mean 'in our love and our delight.'

† From the translation of the Odyssey by S. H. Butcher and A. Lang.

* S. H. Butcher and A. Lang.

† S. H. Butcher and A. Lang.

(ii) Write down the *genitive singular* and *dative plural* (all genders) of ἅπας, τίς, ἕκων, πένης; and the comparative and superlative of ταχύς, σώφρων, ἄνω, ἡδέως.

ἅπας: ἅπαντος, ἁπάσης, ἅπαντος; ἅπασι (ν), ἁπάσαις, ἅπασι (ν).

τίς: τίνος or τοῦ (Hom. τέο, τεῦ), τίσι (ν).

ἕκων: ἑκόντος, ἑκούσης, ἑκόντος; ἑκουσι (ν), ἑκούσαις, ἑκούσι (ν).

πένης: πένητος, πένητι (ν).

ταχύς: θάσσων or θάττων τάχιστος
(ταχύτερος)
(ταχίων)

σώφρων: σωφρονέστερος σωφρονέστατος

ἄνω: ἀνωτέρω ἀνωτάτω

ἡδέως: ἥδιον ἥδιστα

(iii) Parse the following verbal forms, giving the *present infinitive active* of each:—ἔκταθεν, ἐπίσπῃ, εὑρέμεναι, ἥικτο, ἤραρεν, ἤρατο, ἵκηαι, κεκασμένον, κέκλετο, πεποίθεα.

ἔκταθεν: 3rd. plural, weak aorist, indicative passive of κτείνειν.

ἐπίσπῃ: 3rd. sing., strong aor., subj., act. of ἕφέπειν; or 2nd. sing., subj., middle.

εὑρέμεναι: strong aor., infin., act. of εὑρίσκειν.

ἥικτο: 3rd. sing., plup., indic. of ἐοικέναι, a perfect (with present meaning) from the stem of εἴκειν, to be like.

ἤραρεν: 3rd. sing., strong aor., indic., act. of ἄρειν, an unused present, lengthened to ἀραρίσκειν.

ἤρατο: 1. (ᾱ) 3rd. sing., weak aor., indic., middle of αἴρειν.
2. (ᾰ) 3rd. sing., imperf., indic., middle of ἄρᾶσθαι, a deponent verb not used in the active voice.

ἵκηαι: 2nd. sing., strong aor., subj., middle of ἱκνεῖσθαι, deponent verb.

κεκασμένον: sing., neut., nom. or acc. (or masc., acc.), participle, perf., pass. of an unused present κάζειν; used as a part of καίνυσθαι.

κέκλετο: 3rd. sing., reduplicated strong aor., indic., middle of deponent κέλεσθαι.

πεποίθεα: 1st. sing., plup., indic., act. of πείθειν.

(iv) Write down the 3rd. plural imperfect indicative active, and the 3rd. singular perfect indicative passive or middle of ἐκτελέω, τίθημι, ἀνίημι, ἐφορμάω; the 3rd. singular future indicative active of ἐλαύνω, ἀπόλλυμι, κυνέω; the 2nd. singular 1st. aorist indicative middle of φυλάσσω, ἅπτω.

ἐξετέλουν (Hom. ἐξετέλειον), ἐκτετέλεσται;

ἐτίθεσαν, τέθειται;

ἀνίεσαν, ἀνεῖται;

ἐφώρμων, ἐφώρμηται.

ἐλᾷ (ἐλάσει); ἀπολεῖ; (ἀπολέσει); κύσει or κυνήσεται.

ἐφυλάξω; ἥψω.

(v.) Translate the following passages, with short notes upon the *spaced* words:—

(a) εἶδατα πόλλ' ἐπιθεῖσα, χαριζομένη π α ρ ε ό ν τ ω ν.

(b) ἐγὼ δέ μιν οἴῃ ἀ ν έ γ ν ω ν τοῖον ἐόντα.

(c) τ έ ο σε χρή;

(d) ἶδον ἐνθάδε Μέντορα δῖον χθιζὸν ὑ π η ο ῖ ο ν.

(e) σὺ δέ με χ ρ ό ν ο ν ἐνθάδ' ἐρύκεις.

(f) πάσας δ' ἄρ' ἐπώχετο. λ έ κ τ ο δ' ἀριθμόν.

(a) *Laying on the board many dainties, giving freely of such things as she had by her.* (IV. 56.) The genitive is *partitive*, after χαριζομένη, denoting an object affected *only in part* by the action.

(b) *And I alone recognised him though in such guise;* or, *I alone knew him to be such as he really was.* (IV. 250.) In Homer ἀνέγνων (the only tense used) generally means 'I knew well,' 'I knew for a certainty,' being simply a strengthened form of γιγνώσκω. In this line the sense seems to require the meaning 'know again,' 'recognise,' but there is no other instance of such a use of ἀναγιγώσκω.

(c) *What needest thou?* (IV. 463.) τέο is objective genitive, with the impersonal χρή; compare δεῖ μοι τούτου (I need this). All verbs signifying *want* take a genitive of material.

(d) *I saw the goodly Mentor here yesterday toward dawn.* (IV. 655-6.) ὑπηοῖον (ὑπό and ἠώς) is probably an instance of an adjective modifying a predicate. This usage is especially found with adjectives of *time*, as ἐσπέριοι, χθιζός, ὑπηοῖοι (Lat. matutini), etc.; but they are generally in the nominative case.

(e) *Yet thou art keeping me long time here.* (IV. 599.) χρόνον is the accusative of *extent of time*.

(f) *And he went over them all and told their number.* (IV. 452.) λέκτο is a syncopated aorist middle from the root λεγ- to pick, count. The middle seems to suggest that he reckoned them over *as his own;* the aorist, in contrast with the imperfect, points to the *total reached*, rather than the items in the reckoning. In the next line there is a play upon the word λέκτο (from the root λεχ-), meaning, 'he laid himself down,' with the bye-sense, perhaps, of adding himself in as the last item.

(vi.) Explain the force of the prepositions in ἔβη μετὰ πατρὸς ἀκούην; περὶ μεν σε βροτῶν πεπνυμένον εἶναι φάσκε; τῷ δ' ἄρα πατρὸς ὑφ' ἵμερον ὦρσε γόοιο; and give the meanings of the same with different cases.

(a) *He went after, in quest of, news of his father.* (IV. 701.) μετά primarily meant *amid*. Hence
with Accusative: *into the midst of, after, in quest of;* generally, *after, next to.*
with Genitive: *from amidst* (of united action), and so *with.*
with Dative: *in the midst of, among.* (Only in the older poetry).

(b) *He used to say that thou wast wise above, beyond, all mortals.* (IV. 190.)
περί primarily meant *around*. Hence
with Accusative: (motion or extension) *around*, (of number and time) *about.*
with Genitive: (overflow) *from, over and above, beyond* (as here), *about, concerning* (Lat. *de*).
with Dative: *in position around, about, concerning* (rare in Attic).

(c) *And stirred in his heart a yearning to lament his father.* (IV. 113.) ὑπό of that which is *under the surface, secret.* ὑπό primarily meant *under*. Hence
with Accusative: *to* (a place) *under*, (of time) *just before.*
with Genitive: *from under, under, by* (of the agent), *through* (of the cause).
with Dative: *under, beneath.*

III. Passages for Translation from books not prescribed:—

(i) Οἶσθα μὲν οὖν καὶ σύ, ὦ Καμβύση, ὅτι οὐ τόδε τὸ χρυσοῦν σκῆπτρον τὸ τὴν βασιλείαν διασῴζον ἐστιν, ἀλλ' οἱ πιστοὶ φίλοι σκῆπτρον βασιλεῦσιν ἀληθέστατον καὶ ἀσφαλέστατον. πιστοὺς δὲ μὴ νόμιζε φύεσθαι ἀνθρώπους· πᾶσι γὰρ ἂν οἱ αὐτοὶ πιστοὶ φαίνοιντο· ἀλλὰ τοὺς πιστοὺς τίθεσθαι δεῖ ἕκαστον ἑαυτῷ· ἡ δὲ κτῆσις αὐτῶν ἐστιν οὐδαμῶς σὺν τῇ βίᾳ, ἀλλὰ μᾶλλον σὺν τῇ εὐεργεσίᾳ.[1]

(ii) Εἴ τις προσελθών μοι θεῶν λέγοι, Κράτων,
'ἐκὰν[2] ἀποθάνῃς αὖθις, ἐξ ἀρχῆς ἔσῃ·*
ἔσῃ δ' ὅ τι ἂν βούλῃ, κύων, πρόβατον, τράγος,[3]
ἄνθρωπος, ἵππος· ὅτι βιῶναι γάρ σε δεῖ,
εἱμαρμένον[4] τοῦτ' ἐστίν· ὅ τι βούλει δ' ἑλοῦ·'[5]
'ἅπαντα μᾶλλον,' εὐθὺς εἰπεῖν ἂν δοκῶ,
'ποίει με πλὴν ἀνθρώπου· ἀδικῶς εὐτυχεῖ †
κακῶς τε πράττει τοῦτο τὸ ζῷον μόνον.'

[1] εὐεργσία, 'kindness.' [2] ἐκὰν = ἐκεὶ ἄν. [3] τράγος, 'goat.' [4] εἱμάρθαι, 'to have been fated.' [5] αἱρεῖσθαι, 'to choose.'

(i.) Well then thou also knowest, O Kambyses, that it is not this golden sceptre that preserveth the kingdom, but faithful friends are the truest and surest sceptre for kings. Yet think not that men are faithful by nature; for then would the same men be seen to be faithful by all; rather is it necessary that each should himself prepare those who will be faithful to him; and the getting of them is in no wise to be done by force, but rather by kindness.

(ii.) If some god were to come to me, Kraton, and say, 'When thou hast died, thou shalt have life again from the beginning; and thou shalt be whatsoe'er thou wilt—dog, sheep, goat, man, or horse; for thou must needs live twice, this is decreed by fate; choose then what thou dost wish'; I think I should reply at once, 'make me anything rather than man; he alone of living things both prospereth and fareth ill undeservedly.'

* The comma seems to be misplaced in this line.

† The accent of ἀδίκως is misplaced.

NEW DICTATION TESTS.

Suitable for 'Unseen Tests' in Reading also.

STANDARD IV.

No. 65.

The adoption of cool chambers in the fruit-carrying vessels has rendered much safer and easier the transport of perishable kinds of fruit as well as other articles of food, and as a result, supplies come from such far-off countries as Australia, which sends grapes, and Tasmania, to which we are indebted for large shipments of apples. Cocoanuts come in large quantities, and from the husk which surrounds the shells is made the popular cocoanut-matting which is so rapidly coming into general favour.

No. 66.

He questioned nature by observation and experiment. He was thus the pioneer of those to whom we owe so much of that knowledge which has improved the minds, habits, and health of the world. During twenty years, he tells us he spent two thousand pounds on instruments and books. Then that others might reap benefits from his labours, he wrote books on all the subjects he knew. Those which still remain show us some of the things he had studied. Amongst other things, he discovered the cause of the rainbow.

No. 67.

Brighton was cheered yesterday by a slice of that real old September weather which makes it the most delightful autumn resort in the world. Last year the red-stained month of blackberry and nut and harvest moon was beyond reproach. Yesterday was beyond reproach, too, and a score of such yesterdays will do a deal to wipe out from our minds the memory of much spite and malice. Give Brighton a gentle sea wind by day and a slight breeze from the land by night, and no spot can equal her in charm.

No. 68.

A boy while standing in front of a lions' cage incautiously approached too near the bars, when one of the animals stretched out his paw, and, catching the unfortunate youth by the hair, inflicted serious injuries upon his head, almost scalping him. The visitors to the menagerie, hearing the cries of the victim, imagined that the lion had broken loose, and rushed panic-stricken to the doors, many persons being very seriously injured in the crush which took place at the exits.

No. 69.

Believe me, whatever of dignity, whatever of strength we have within us, will dignify and will make strong the labours of our hands; whatever littleness degrades our spirit will lessen them and drag them down. Whatever noble fire is in our hearts will burn also in our work. Whatever purity is ours will chasten and exalt it; for as we are, so our work is; and what we sow in our lives that beyond a doubt we shall reap, for good or for ill, in the strengthening or defacing of whatever gifts have fallen to our lot.

No. 70.

A lad named Turner, son of a gentleman who is travelling with his wife and children, seized hold of a piece of wood in the water, and while thus sustaining himself was attacked by a large rat, which fastened its teeth firmly into his neck, and bit him severely. The boy pulled it off, but shared his plank with the rat for some time, until the animal was eventually washed off.

No. 71.

As might naturally be expected, considering the prodigious quantity it eats, the caterpillar grows very rapidly; in fact it has been estimated that a month after leaving the egg its weight has increased over ten thousand times, and during the first four weeks of its existence it consumes about forty thousand times its own weight of food. Several times during its life, however, its appetite fails, and there is a period of inactivity, during which the old skin comes off the body; but this operation safely accomplished, the appetite returns with renewed vigour.

No. 72.

A lioness escaped from her cage while one of the proprietors and a surgeon were examining her foot, which had sustained an injury. Both of these gentlemen escaped. The lioness pursued the doctor round several travelling carriages till she encountered a camel, the throat of which she seized. With her claws she tore a large portion of the neck away. She then began to feast herself on the dead camel, and while so engaged was shot with a revolver by one of the company.

No. 73.

Of the many ways which are in common use for disinfecting rooms and houses, none so easily recommends itself to the senses and to common sense as the coffee process. Upon a shovelful of red-hot coal throw a handful of ground coffee, and walk with it through the parts of the house where the foul smells exist or which you desire to disinfect. The essential oils of the coffee will instantly correct the evils.

No. 74.

When first dug up the diamond is covered with an opaque crust which conceals its brilliancy. In the mines they are found in a loose gravelly substance resembling sand. On these spots, sheds are erected for the washers, where water can easily be conducted. These sheds are composed of the bamboo, upon which is laid the long native grass which protects the workers from the rays of the sun. Overseers are placed at different points where they can readily overlook the men.

No. 75.

No sort of bird, beast, or creeping thing will touch a castor oil plant. It seems to be a rank poison to all the animal world. Even a goat will starve before biting off a leaf, and a horse will sniff at it and turn up his upper lip as though it had the most detestable odour on the face of the earth. Even worms and the locusts will pass it by, though they may eat every other green thing in sight, and there is no surer way to drive moles away from a lawn than to plant a few castor beads here and there. Even the tobacco worm will refuse to be fed on its leaves.

No. 76.

The cry of 'Fire! fire!' shouted by a lad from one of the cottages yesterday morning, about eight o'clock, caused a number of people to come quickly upon the scene. The alarm bells were rung, and the Fire Brigade were promptly in attendance. Fortunately, however, their services were not required, as a woman had meanwhile rushed into the house and extinguished the flames, which came from a mattress which some children in the bedroom had set on fire with a box of matches.

No. 77.

'The sun is up now, and the light mist floats over the tops of the firs. Our path runs through them for a couple of miles or more. The trunks shine like copper bronze in spots where the light breaks through, and the fresh green tips of new foliage stand out like emerald tassels against the old, which will gradually drop off in small dead needles, making a carpet beneath, soft to walk on; or a couch whereon to lie for a time, to rest and inhale their health-giving fragrance.'

No. 78.

The delay which seems to have been incurred through a variety of circumstances in the establishment of the electric light in this country has not been all lost time, for we are now able to profit by the experience of other countries, and will be able to avoid many pitfalls into which we otherwise might have stepped. We are at least warned, by the many fatal accidents which have occurred, against the danger of leaving wires in exposed situations unprotected.

No. 79.

The slight adhesive force which holds its atoms together, the breaking up into fragments on the slightest change of position, are the qualities which fit water for the formation of natural reservoirs and springs. The rain which falls upon the surface of the earth soaks through the soil of sand, gravel, or chalk, and sinks lower and lower till it reaches a bed of clay or rock which it cannot pierce. Here it is held and gathered together, as in a basin, till it makes its way out.

No. 80.

A little boy, aged eight, has met with a shocking death. He was playing with a number of other children in a large sand-hole, when, without any warning, a mass of sand fell and buried him up to his neck. His youthful companions, not one of whom was more than eight years old, although in the greatest danger themselves, immediately attempted his rescue; but while they were engaged in scraping away the sand from his body a quantity of sand fell and completely buried another boy.

STANDARDS V.—VII.

No. 50.

There is no doubt that something more than the formalities of courtesy dictated the letter of regret which the Queen wrote on hearing of the death of Mr. W. H. Smith. Her Majesty has few

personal friends outside the number of her relations, and it is scarcely possible that she should have. But occasionally, and very occasionally, some one man of the Ministry becomes an object of her special regard, and so was it in the case of the late leader. The Queen not only believed in him most firmly as a politician, but had the highest regard for him as a confidential adviser.

No. 51.

For the benefit of those who are obliged to drink well water at crowded summer resorts, it should be borne in mind that a small dose of alum added to doubtful water has a very purifying effect. Particularly against the germs of typhoid fever, alum is very effectual. There is so little difficulty in applying this, that everyone should know about it. To have one's drinking water boiled and cooled is practically impossible at an hotel or boarding-house; but anyone can carry a little box of powdered alum in his pocket, and drop a few particles in his tumbler before drinking, and it seems likely that many lives might be saved by the practice. The amount of alum required is very small, not enough to lend a taste to the water.

No. 52.

London throws one swift glance on a new-comer, discovers what marketable talent he possesses—if, indeed, he has any—offers him his price, and if he disputes the justice of the verdict, contemptuously pushes him aside and cries 'next.' And the 'next' is a legion. Everywhere a hundred feet are struggling to get into one pair of shoes. No one can afford to step out of his shoes for an instant; if he does, some one else has jumped into them. London is a mob; the one law of safety is to use your elbows well, and move with the multitude; if you stop you are trodden down, and the tide of human life rolls on unheeding above you.

No. 53.

How many thousands come to London every year, with an eager sense of strength in them, which promises victory, and in less than another year withdraw, beaten and depressed! There is no place like London for teaching a man his own proper insignificance. He who feels that he has general talents for everything is soon made to realise in that bustling multitude that he has particular talents for nothing. He is instantly seized by an immense machine, whose gigantic winnows are always at work, separating the wheat from the chaff. The man who thinks himself qualified to start a new Whiteley's is soon made to feel that a pound a week at a ledger is nearer his mark, and he at length grows dull to the feebler spurrings of ambition.

No. 54.

The introduction of the automatic machine has produced a new kind of thief. Amongst the industries of Birmingham may now be included the manufacture—on an extensive scale—of iron discs which the thief may drop, instead of honest pennies, into the slot of the machine that he wishes to rifle. The operator will not, of course, if he is wise, drop them into the slot in too rapid succession, as there is danger of his attracting unwelcome attention; but with due caution there is no reason why he should not go on until he has emptied as many machines as his supply of discs will run to.

No. 55.

Literature was not so inclusive as it once was, when it was possible for a single man to read all the books in existence and know everything that was to be known. In the great subdivision of learning the English language offered an excellent career for any scholar, and the material for following such a career at a cost of little except application, a chief pleasure in itself. They had the highest authority for pronouncing the English language to be, upon the whole, a most perfect language. At any rate, it was sometimes called vehicular, although he confessed that, in the course of his reading, he was sometimes reminded of a long row of empty cabs, which might be vehicles but were without any fares.

No. 56.

Sir William White, on Saturday, had an audience with the Sultan, at which, it is affirmed, the personal misunderstanding that had arisen in connection with recent events was satisfactorily terminated. We shall be glad if this proves to be the case, for a good deal of speculation is being indulged in at the present moment as to the temper, policy, and purposes of the Sultan in his somewhat difficult relations with the Powers on whose goodwill to himself, and on whose amity among each other, the continued existence of the Ottoman Empire practically depends.

No. 57.

Captain Brand, in reply, alluded to the modest sum which had been alloted by the County Technical Education Committee, and said he regretted that the Board considered that was of no use to them. He wanted any fisherman there to consider whether it would be advantageous to them to have a class of technical instruction connected with their industry. Although some of them might think they knew more than they could be taught, there might be systems of fish-curing known to foreign countries, a knowledge of which would be to their benefit. He was in communication with a gentleman interested in the matter, and if anyone connected with fishing would communicate with him he would see whether anything could be done in advancing instruction in that or any other branch of industry in the town.

No. 58.

His Lordship delivered a speech in which he congratulated those connected with the college on the singular and remarkable success which had attended its existence of less than ten years. Speaking later, his Lordship referred to technical education, remarking that it was absolutely necessary for the people of this country to judge for themselves if they intended to hold their present place in the world. Under a pressure of industrial competition, more severe now than ever, this was the wrong time to rest upon our prestige, or to let ourselves grow fat and lazy. We should have to struggle hard to keep our position, but he thought we should do it, because he believed that an Englishman showed best when he was hardest pressed.

No. 59.

Science has been at great pains to show that the production of rain by such means as were tried last summer is utterly impossible; yet, if the latest account of the experiments be reliable, science will clearly be obliged to review its pronouncement. The experiments were conducted on such a large scale, and in such an orderly manner, and were followed so closely by torrents of rain, as to exclude the probability of mere coincidence. There are some individuals who regard the weather with a kind of sacred awe. They consider it subject to no rule, save the caprice of Providence, and cannot see that it is ridiculous to place rain outside the realm of law.

No. 60.

The project of an 'Eiffel' Tower for London has assumed substantial form. An estate of 280 acres has been purchased, a company formed without application to the public, a plan has been approved, a station erected on the contiguous railway, the foundations of 'The Tower' have been commenced, and on Saturday a large party of representatives of the Press were conveyed in twelve minutes, to see what was going on. The ground acquired is undulating and woody. The estate is nearly equally divided between the building property and the ornamental park, with its 'Tower' and Winter Garden.

No. 61.

There should always be one spot in the home kept sacred to the best interests of the family—a room full of comfort, where the sofa is made to lounge on, and the chairs to tilt back, and the carpet to dig the toes in; where bills and bickerings are alike forbidden, and the strait-laced propriety of the dining-room and the drawing-room can be abandoned for romps and story-telling; where the firelight has a glow of old-fashioned comfort, and the very shadows are tame and approachable; where the dust doesn't show, and nothing is too fine for use, and at the door of which all the burdens drop off—a room whose speech is silver and whose silence is golden, where the tranquility of a summer Sabbath is broken only by sweet murmurs of love and confidence.

No. 62.

There seems to be little doubt that we are to receive yet another visitation from the influenza. The discovery of the responsible microbe has not been followed by its destruction; the epidemic is, at this moment, raging in Paris and Berlin, and has already gained a firm foothold in the north and west of the United Kingdom. It is sad news, for unhappily the arrival of the complain' is not one of those cases in which the old proverb, 'fore-warned is fore-armed,' holds good to any great extent. A healthy life, though preferable for many reasons to an unhealthy life, is no sure shield against it.

No. 63.

The Duchess of Westminster presented the prizes last night to the students of the Schools of Science and Art, the Duke being in the chair. The Vice President of the Council of Education, in the course of a lengthy speech on technical education, said it had been found that Germany, France, Switzerland, and other Continental countries, with enterprise equal to our own, had adapted the best mechanical skill and the best machinery in connection with their commercial resources, and had applied a system of technical education which had brought about considerable results.

No. 64.

Carriages of different classes should be painted in strongly contrasting colours—say respectively in white and brown, or light yellow and blue—in order to enable passengers to distinguish one class from another at a glance, and to save them the wholly unnecessary trouble of straying up and down the whole length of a train, encumbered by hand-luggage, in search of the particular compartment in which their tickets entitle them to travel. The shape and size of the palace-cars constitute a sufficient distinction in themselves; but 'first' and 'third' class passengers ought to be enabled to reach their places without difficulty, embarrassment, or even needless hesitation.

No. 65.

A small hole of this kind is very likely to be overlooked by common workmen, who are the only people whose operations on stone and wood disclose cavities in the interior of such substances. In the case of toads, snakes, and lizards, that occasionally issue from stones that are broken from a quarry, or in sinking wells, and sometimes even from strata of coal at the bottom of a coal mine, the evidence is never perfect to show that the reptiles were entirely enclosed in a solid rock; no examination is ever made until the reptile is first discovered by the breaking of the mass in which it was contained, and then it is too late to ascertain, without carefully replacing every fragment, whether or not there was any hole or crevice by which the animal may have entered the cavity from which it was extracted.

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NEW COMPOSITION STORIES.—STANDARD V.

Suitable for 'Unseen Tests' in Reading also.

No 81.

A SENTIMENTAL LION.—An extraordinary story is told to show what sympathy there is between the lion and human monarchs. Shortly after the execution of Charles I. a party of seven or eight gentlemen went to the Tower of London to see the lions. One of them, called 'Old Harry,' snorted and roared in a terrible fashion all the time the visitors were in front of the cage. The keeper said it had never behaved so before, although it was seen daily, and he suggested that one of the party had done it an injury. They all declared that they had not been near the place for more than a year, but as the lion remained as furious as ever, the keeper hit on the device of bringing in the gentlemen, one by one, to learn whether the animal felt spite at any particular visitor. One by one they were introduced. As soon as one especially came in, the lion became furious. The keeper was puzzled, and asked the gentleman to tell him what he had done. He declared he could think of nothing, except that he had been on the scaffold when the late king was beheaded, had dipped his handkerchief in his blood, and had it in his pocket now. So saying, he passed his handkerchief to the keeper, who threw it to the lion. No sooner did 'Old Harry' get it than he left off growling, took the handkerchief between his fore-feet, and falling to the ground, laid his head on it. From this attitude he never moved till he died three days afterwards.

No. 82.

HOW TO SILENCE THE DONKEY.—Those who do not like to hear the donkey bray will be glad to know of the plan that the Turks use to prevent Neddy from displaying his vocal powers. It seems, that before the donkey can deliver his hee-haws he must hold his head up in the air, and raise his tail on a level with his back-bone. Now observe what the cunning Turk does. He ties a pretty heavy stone to the end of the creature's tail, and waits calmly for the result. When the donkey is inclined to bray he tries to bring his tail to the usual height, but finding that he cannot do this, he postpones his performance until another and more fitting opportunity presents itself. And there is peace in that neighbourhood for a time.

No. 83.

HOW HE ESCAPED TORTURE.—In one of the battles of North America several Highland soldiers fell into the hands of the Indians. The prisoners were treated with the most fiendish cruelty before they were killed, and one of them, Macpherson by name, resolved to escape the horrible fate of his mates. Making signs that he had something of importance to tell them, an interpreter was brought, and Macpherson said he knew of a rare plant, which being used in a certain way on the skin would enable the body to resist the blow of the tomahawk, or the cut of a sword. The Indians' curiosity being aroused, Macpherson was allowed to go to the woods (properly guarded, of course), to search for the herb that possessed such wonderful virtues. He picked a few plants, and then returning to the camp, had them boiled. He next rubbed his neck with the juice and laid his head on a log of wood, bidding the strongest of the Indians strike at his neck, when he should find he could do no harm. The Indian hit with all his might, and Macpherson's head was at once severed from his body. The red men were amazed at their own simplicity in believing his story, and at the extraordinary ingenuity with which he had escaped the lingering death by torture that had been prepared for him.

No. 84.

RELIGIOUS DOGS.—The famous St. Bernard dogs are very carefully trained. A traveller who visited some of the monasteries of the monks of St. Bernard, a few years ago, found the monks teaching their dogs from the earliest stages of puppyhood. Not only is physical and mental training included in the teaching, but spiritual culture is by no means neglected. At meal-time the dogs sit in a row, each with a tin dish before him containing his repast. Grace is said by one of the monks; the dogs sit motionless with bowed heads. No one stirs until the 'Amen' is spoken. If a frisky puppy partakes of his meal before grace is over, an older dog growls and gently tugs his ear.

No. 85.

HOW THE PRISONER WAS RESCUED.—In the battle of Poitiers, a number of Scottish soldiers fought on the side of the French, and several of them were taken prisoners by the English. Amongst them was Sir Archibald Douglas. Being dressed in a suit of splendid armour, the victors thought they had captured some great nobleman. Several of the English were about to strip off his armour, when Sir William Ramsay, who was also a prisoner, happening to catch Sir Archibald's eye, gave him a meaning look. Pretending to be very angry, he cried out 'You rascal! How is it you are wearing your master's armour? Come here and pull off my boots.' Douglas went forward and drew off a boot, with which Sir William beat him. The English interfered, saying he was a lord. 'What!' shouted Ramsay, 'he a lord? Why, he is a base knave, and I suppose has slain his master.' All this was acted so naturally that Ramsay was allowed to ransom the pretended manservant. The money having been paid, Ramsay gave Douglas another thrashing and bade him begone. This Sir Archibald did.

No. 86.

THE BRAVE ELEPHANT.—A KING in ancient days, being wounded in battle, fell from the back of his elephant. The enemy, supposing him dead, pushed forward in order to bespoil him of his rich clothing, but the faithful animal, standing over the body of its master, boldly repelled everyone who dared to approach, and, while the enemy stood at bay, took the bleeding king up in his trunk and placed him again on his back. The king's troops came by this time to his relief, and thus the king was saved, but the poor elephant died of the wounds which it had received in the heroic defence of its master.

No. 87.

A CHIP OFF THE OLD BLOCK.—The little six-year-old daughter of a lawyer extricated herself from a difficulty the other day with tact. She had just recovered from a long illness, and sat bolstered up in bed feebly counting her pennies. She decided that there were twenty-nine, and her papa gave her another to make the number thirty. Later her mother helped her to count them and they found thirty-one. The father then entered a protest and asked her to return his penny, as she had obtained it under false pretences. She looked up in doubt from the little pile of pennies to her father, and then said: 'I dess I can't give it back to you, for I can't tell which one you dave me.'

No. 88.

A DOG'S AFFECTION.—A young circus rider, whose early death owing to a fall from her horse lately excited much sympathy, had a favourite dog, a large creature called Turk, who was her inseparable companion, escorting her to and from the circus, and guarding her dressing-room while she was engaged in the performance. The day after her death Turk arrived at the circus at the usual hour, waited till the representation was over, and then went away with his tail between his legs. For several days he came back at the same time, and lay patiently at the door of his late mistress's room, refusing to eat or drink, or to go home with any of his former friends, and occasionally uttering a plaintive howl. At last the dog disappeared, and from all appearance has crept away into some corner to die.

No. 89.

INTRODUCED BY A HORSE.—Benjamin Franklin once bought a fine black horse which had once belonged to a minister. He happened on one of his journeys to pass near the house of another clergyman, an intimate friend of the former owner. The house stood at the end of a long lane. As the horse came to the lane, he instantly wheeled into it. Franklin tried in vain to turn him back into the main road. He then loosed the rein, and the horse swiftly galloped to the house. The family came out, the clergyman

leading. Franklin raised his hat, and said, 'I am Benjamin Franklin! I am travelling to Boston, and my horse seems to have some business with you, as he insisted in coming to your house.' 'Oh,' replied the clergyman, 'that horse has often been here before. Pray alight, and come and lodge with us to-night.' The invitation was accepted, and a delightful evening followed. A friendship was formed, and Franklin never passed that way without a call. He often said he was the only man who was introduced by his horse.

No. 90.

THE QUEEN'S FLOWER-BED.—There is only one bed of flowers in the beautiful grass plot at Osborne, which is in summer fragrant with the scents of pinks and carnations, and this is always watched by Princess Beatrice, who tends and cares for the flowers for the Queen's delight. The Queen loves gardening, and all her children were taught to dig and plant flowers, fruit, and vegetables. Each child had a separate garden, and each had exactly the same kinds of vegetables and flowers. These gardens are still kept up, exactly as princes and princesses cultivated them years ago. Princess Beatrice is still very fond of the gardens, and may often be seen with her children weeding and hoeing them. She has, however, another care in a field quite close that takes more attention, and this is a huge pack of rabbits of the long woolled species. The wool is used by the Princess for spinning, who with it weaves most beautiful articles, which she gives to charity bazaars.

No. 91.

HOW A FORTUNE WAS OBTAINED.—It has been publicly stated that the Comte de Paris obtained a great accession of riches in a mysterious way. More than ten years ago a man of high rank wrote to him in these terms:—'I owe my immense fortune to your grandfather, and I wish to show my gratitude to him by offering you part of it. Give a trusty man five of your visiting cards. He will present them to five stockbrokers named below, and what I intend for you will be handed to him.' At first sight it looked like a practical joke, but the name of the maker of the strange proposition was at least a warrant of the power to do what he said. The Comte de Paris judged it well to test the matter. He obeyed the orders to the letter, and his messenger brought back from the brokers a cabful of bonds. They were packed in metal boxes, transferred to England, and deposited at Coutts's bank. And the recipient has kept the secret of the giver's identity, as he wished.

No. 92.

CAN ANIMALS COUNT?—There was a pelican that lived in a fisherman's family. It was fed upon the remains of the fish, and used always to go down to the shore and wait till the boats came in. But as the fisherman rested on Sunday, no boats went out and none returned. The bird appeared to know when this day arrived, for it never moved from the tree upon which it was wont to spend its leisure hours. It probably guessed when Sunday came, because it saw that the fishermen were all stopping at home, and perhaps had dressed themselves in cleaner clothes.

No. 93.

THE PAINTER'S REVENGE.—A celebrated painter painted a portrait of an old countess, who pretended to be only thirty when nearly sixty. She refused to accept it, saying it did not look anything like herself, and that her friends would not recognise a single feature of her. The painter smiled at the remark, and conducted the lady to her carriage. Next morning a great crowd was gathered before a jeweller's window, for the artist, as soon as she had refused the portrait, set to work and painted a few iron bars on the picture with these words, 'In gaol for debt,' and exhibited the painting in the principal street. A few hours later the countess was back at the studio, scolding the artist for having exhibited her likeness. 'Most noble lady,' was the artist's reply, 'you said the painting did not look anything like yourself, and that your most intimate friends would not have recognised a single feature. I wanted to test the truth of your statement, that was all.' The portrait was taken away, the artist charged double price, and gave the amount to the poor.

No. 94.

EXTRAORDINARY ADVENTURES OF A £5 NOTE.—Recently a woman residing in Shields was leaving the post-office, and in passing along the street near the police headquarters she tore up a £5 note under the impression that it was an ordinary piece of paper. She did not discover her mistake till the evening, when she informed the chief constable of the unfortunate circumstance. It being very dark, a number of police officers were set to work with lanterns, and after a good deal of labour succeeded in collecting a number of pieces of the note. These were pasted on to a sheet of paper, and application was made to a Newcastle bank; but the patched-up note being refused there, it was sent to London to the Bank of England, and by return of post a new £5 note was received by the woman, who showed her gratitude to the police by a contribution to their police fund.

No. 95.

THE TRADER OUTWITTED.—An English trader succeeded in selling a large quantity of gunpowder to an Indian by assuring him that it was grain that would yield a hundredfold if carefully sown. Away went the Indian to sow his powder, full of glee at the notion of raising enough for his own use and to supply his neighbours at a large profit. On finding by experience how he had been duped, he bided his time till he reckoned the trickster must have forgotten the trickery. The Indian then went to the trader's store, and bought five pounds' worth of goods on trust. The time for payment having come, the dealer trotted off to his customer's dwelling to demand his due. 'Good!' exclaimed the latter. 'But my powder not yet sprouted. Me pay you when me reap him,' and he kept his word.

No. 96.

FATAL EFFECT OF SOUND.—When peace was proclaimed in London in 1697, two troops of horse were dismounted and drawn up in line, in order to fire their volleys. Opposite the centre of the line was the door of a butcher's shop, where there was a mastiff of great courage. The dog was sleeping by the fire; but when the first volley was fired it immediately started up, ran into another room and hid itself below the bed. On the firing of the second volley the dog rose, ran several times about the room, trembling violently and apparently in great agony. When the third volley was fired the dog ran about once or twice with great violence, and instantly fell down dead, throwing up blood from its mouth and nose.

No. 97

DEFENDING HIS PROPERTY.—A Scotch pedlar, attacked by three highwaymen, defended himself with great courage and obstinacy, but was at last overpowered, and his pockets rifled. The robbers expected, from the extraordinary resistance they had experienced, to lay their hands on some rich booty; but were not a little surprised to find that the whole treasure which the sturdy Scotchman had been defending at the risk of his life, consisted of no more than a crooked sixpence. 'The plague on him!' said one of the rogues. 'If he had had eighteenpence he would have killed the whole of us.'

No. 98.

TWO CURIOUS BIRDS.—The bower bird of Australia builds a long walk or bower with grasses, and then collects all sorts of little things to decorate it. Gaudy feathers he likes particularly for this purpose, but does not disdain shells or any small object he can find. So well is this known, that when persons lose things in the bush they generally find them in the bower bird's nest. It is evident the bird takes them purely as ornaments, as he lives on seeds and fruits. Another noteworthy bird is the lyre bird. He can imitate nearly every sound made by man, as well as the notes of other birds. Sometimes a man, working on his clearing, hears somebody chopping wood a short distance away, and a dog barking at his heels. He goes in search of the intruder, and finds, after a long walk, that the lyre bird has been making game of him. A man using a saw hears somebody doing the same thing, and, after searching unsuccessfully, discovers at last that it is the bird.

No. 99.

A DOG DETECTIVE.—Some time since a gentleman residing in San Francisco had a suit of clothes stolen. The police having failed to trace the thief, the clothes were looked upon as gone for good. One Sunday, however, while passing a church, from which the people were just coming out, the owner of the clothes noticed the strange conduct of his dog. A man had stepped out of the church, and no sooner had the dog seen him, than it began to howl and jump about. The animal's master looked very closely at the person who was thus upsetting his dog, and he then discovered that he was wearing his missing suit of clothes. A policeman having been fetched, the party went to the nearest station, where the wearer of the clothes was able—fortunately for himself—to satisfy everybody that he had bought the clothes in good faith. Nevertheless, he had to restore them to the rightful owner.

No. 100.

ADOPTED BY AN ELEPHANT.—A story is told of an elephant's affection for her young one. Her calf unfortunately dying, the mother refused to be comforted, and grew angry and even dangerous. At last one morning she broke her chain and fled into the forest. Ten days later her keeper went one night into the jungle to watch for bears. As he was returning home in the morning he saw an elephant and calf coming towards the camp. Hiding behind a tree, he waited till the animals passed, when he found it was the missing elephant. The runaway had stolen the calf of another elephant to take the place of her dead child. It was pleasant to see her go about the camp and call everybody's attention, by a touch of her trunk, to her adopted youngster. Her good temper and docility were restored at once.

LA JEUNE SIBÉRIENNE.

TRANSLATED BY PROFESSOR DARQUÉ—*(Author of 'Pupil Teachers' French Course.')*

La Jeune Sibérienne.

En partant d'Ischim, Prascovie ne s'était représenté que les dangers physiques qu'elle pouvait courir : elle était préparée d'avance à braver la faim et les froids les plus rigoureux, la mort elle-même ; mais, depuis que la société commençait à lui être connue, elle entrevoyait des obstacles d'un autre genre contre lesquels tout son courage ne pouvait la soutenir. Après avoir échappé au désert, elle pressentait cette affreuse solitude des grandes villes, où le pauvre est seul au milieu de la foule, et où, comme par un horrible enchantement, il ne voit autour de lui que des yeux qui ne regardent pas et des oreilles sourdes à ses plaintes.[303]

Depuis qu'elle avait connu les dames d'Ekatherinembourg, un nouveau sentiment des bienséances,[304] et un peu d'orgueil peut-être, lui rendaient plus pénibles les démarches auxquelles l'obligeait sa situation. 'Hélas ! disait-elle, où trouverai-je des amies comme celles que[305] j'ai quittées ? Me voilà maintenant à plus de mille verstes d'elles. Que deviendrai-je[306] en arrivant à Pétersbourg, lorsque j'approcherai du palais impérial, moi qui tremble de me présenter ici dans une misérable auberge ?'

Ces réflexions s'offrirent avec tant de force à son esprit, que, pour la première fois, un profond découragement s'empara d'elle et lui arracha des larmes. Le souvenir de son père qu'elle avait abandonné, peut-être inutilement, la remplit de regrets et de terreur. Mais bientôt elle se reprocha sa faiblesse et son manque de confiance en Dieu ; elle en demanda pardon à son ange gardien : 'Et ce fut lui, sans doute, disait-elle en parlant de cette circonstance de sa vie, qui m'inspira la pensée de rentrer dans l'église pour demander à Dieu le courage que j'avais perdu.'

En effet, elle rentra précipitamment pour implorer le secours du ciel. Une religieuse se trouvait dans ce moment près de la porte pour la fermer : frappée du mouvement subit de la jeune étrangère, qui ne l'aperçut pas, ainsi que de la ferveur qu'elle mettait à ses prières, elle l'aborda pour l'interroger et l'avertir qu'il était l'heure de fermer l'église. Prascovie, un peu déconcertée, lui raconta naïvement la cause de sa brusque rentrée dans le temple,[307] lui fit part de la répugnance qu'elle avait d'aller chercher un asile dans une auberge, et finit par la supplier de lui en accorder un dans le couvent, ne fût-ce que dans les cloîtres. La portière lui répondit qu'on ne logeait pas les étrangers dans le couvent, mais que Mme. l'abbesse[308] pourrait lui donner quelques secours. 'Je n'en demande

The Young Siberian.

When Prascovie started from Ischim, she had only considered the physical dangers she might run ; she was prepared beforehand to face hunger, the most intense cold, and even death ; but, since society had begun to be known to her, she foresaw obstacles of another kind against which all her courage could not sustain her. After she had got safely through the desert, she dreaded that frightful loneliness of large towns, where the poor is alone in the midst of the crowd, and where, through a horrid enchantment, he only sees around him eyes which do not look and ears *that are* deaf to his sad tale.

Since she had known the ladies of Ekatherinemburg, a sentiment of propriety new to her, and perhaps a little pride, rendered more painful to her the steps which her position compelled her to take. 'Alas ! she said, where shall I find friends like those I have just left ? Here am I now more than one thousand versts away from them. What will become of me, who *already* tremble here on entering a wretched inn, when I shall draw near to the imperial palace ?'

Those reflections presented themselves so forcibly before her mind, that, for the first time, a profound discouragement took possession of her and drew tears from her eyes. The remembrance of her father whom she had left, perhaps uselessly, filled her with regret and terror. But soon she reproached herself with her weakness and her want of trust in God ; she asked her guardian angel's pardon for it : 'And it was he, no doubt, she said while speaking of that event of her life, who suggested to me the thought of re-entering the church in order to ask of God the courage which I had lost.'

Indeed, she went in again hurriedly to implore the help of Heaven. A nun happened to be at that moment near the door to close it : struck with the sudden movement of the young stranger, who did not perceive her, as well as with the fervency of her prayers, she went to her to question her and inform her it was the hour of closing the church. Prascovie, rather disconcerted, told her candidly the cause of her abrupt return into the temple, informed her of her reluctance to go and seek a lodging at an inn, and ended by entreating her to grant her one in the convent, were it only in the cloisters. The sister-porteress answered her that they did not lodge strangers in the convent, but that the lady superioress might give her some help. 'I ask none other than a refuge for this night, replied Prascovie

Notes.

(305) The translator has taken the liberty to transpose this conjunction.

(303) *Plainte*, literally 'complaint.'

(304) *Les lois de la bienséance*, the rules of good breeding, a breach of which is termed *un impair*.

(305) Notice that neither the relative pronouns objects, nor the conjunction 'that' are ever understood in French, though they frequently are in English.

(306) *Que deviendrai-je*, literally 'what shall I become.'

(307) *Temple*, nowadays, in common parlance, only refers to 'Protestant churches.'

(308) *Abbesse*. Before the great French revolution, abbots and abbesses were not necessarily priests, monks, or nuns ; a great many of them were most mundane, and only coveted those posts of honour for the sake of the incomes derived from them.

pas d'autre qu'un asile pour cette nuit, répliqua Prascovie en montrant une bourse qui contenait quelque argent. Des dames charitables m'ont donné les moyens de me passer d'aumônes pour quelque temps, et je ne demande que la protection du couvent pour cette nuit. Demain, je continuerai ma route.'

La religieuse consentit à la conduire chez l'abbesse. La respectable supérieure était en prières lorsqu'elles entrèrent dans sa chambre : la portière s'arrêta près de la porte, et se mit à genoux ; Prascovie l'imita,[309] et pria Dieu de lui rendre l'abbesse favorable. Lorsque celle-ci eut fini son oraison,[310] elle s'approcha de la jeune fille, qui restait à genoux, et la releva avec bonté. Prascovie lui dit son nom et le but de son voyage ; elle montra son passeport et demanda l'hospitalité pour la nuit, ce qui lui fut accordé. Bientôt entourée de plusieurs religieuses amenées par la curiosité dans l'appartement de l'abbesse, elle répondit aux interrogations multipliées qui lui furent faites, et raconta les aventures pénibles de son voyage avec tant de simplicité et une éloquence si naturelle, qu'elle fit répandre des larmes aux dames qui l'écoutaient et leur inspira[311] le plus vif intérêt. On la combla de caresses et de soins ; l'abbesse la logea dans son propre appartement, et forma dès lors le projet de la retenir au couvent et de la compter au nombre de ses novices.

The nun consented to take her to the abbess. The venerable superioress was praying when they entered her room : the sister door-keeper stopped near the door, and knelt down ; Prascovie followed her example, and prayed to God that He would render the abbess favourable *to her wish*. When the abbess had ended her prayer, she drew near the young girl, and raised her with kindness. Prascovie told her her name and the object of her journey ; she showed her passport and asked hospitality for the night, which was granted. Soon surrounded by several nuns brought by curiosity into the apartment of the abbess, she answered the many questions that were asked her, and related the painful adventures of her journey with so much simplicity and so natural an eloquence that she drew tears from the eyes of the ladies who were listening to her and made them take the liveliest interest in her. She was overwhelmed with caresses and attentions ; the abbess lodged her in her own apartment, and from that moment resolved to keep her in the convent and reckon her among the number of her novices.

(309) *L'imita*, literally 'imitated her.' *Suivit son exemple* would convey the very same idea.

(310) *Oraison* is the term used in the Catholic prayer-book, whether Roman or Greek ; hence the English word 'orison.'

(311) *Leur inspira*, literally 'inspired them with.'

Prascovie s'était proposé depuis longtemps de prendre le voile si son entreprise réussissait. On[312] a vu précédemment que, jusqu'à son arrivée à Ekatherinembourg, elle avait cru que la ville de Kiew était sur le chemin de Pétersbourg. C'était dans cette ville qu'elle s'était promis[313] de faire ses vœux[314] dans la suite ; elle espérait voir, en passant, les fameuses catacombes, honorer les reliques des saints[315] qu'elles renferment, et s'arrêter une place, pour l'avenir, dans une des maisons religieuses[316] de cette ville.

Prascovie had long before *this* intended to take the veil, if her enterprise should prove successful. We have seen previously that, until her arrival at Ekatherinemburg, she thought the town of Kiew was on the road to St. Petersburg. It was in that town that she had made up her mind to become a nun later : she hoped to see, in passing, the famous catacombs, to honour the relics of the saints which they contain, and secure a place, for the future, in one of the convents of that town.

(312) The indefinite pronoun *on* is usually preferred to *nous* in such expressions.

(313) *S'était promis* might be rendered literally by 'had promised to herself.'

(314) The proper meaning of *vœu* is 'vow' ; it then is used only in religious matters. When used figuratively it merely expresses 'an ardent wish.'

(315) Catholics have days set apart for the worship of particular saints, just as most Protestant churches are consecrated to the memory of some saints.

(316) *Maisons religieuses*. Needless to observe that these houses are so called because they are inhabited by people who have taken religious vows.

Ayant reconnu son erreur, elle ne fit aucune difficulté de choisir le couvent de Nijeni pour sa dernière retraite ; mais elle le promit seulement à la supérieure, et, comme on la pressait d'en faire le vœu formel, elle refusa : 'Sais-je moi-même, répondit-elle, ce que Dieu exige de moi ? Je veux,[317] je désire sincèrement finir ici mes jours ; et si telle est la volonté de la Providence, qui pourra s'y opposer ?'

Having found out her mistake, she had no objection to choose the convent of Nijeni for her last home ; but she only made the promise to the lady superioress, and, as she was urged to make the formal vow to do so, she declined : 'Do I know myself, what God requires of me, she replied ? I wish, sincerely wish to end my days here ; and if such be the will of Providence, who will have the power to prevent it ?'

(317) It is doubtful whether *je veux* is here to be taken in its proper or in its figurative sense, because, if it had been used in the former, it ought to have been placed after *je désire sincèrement*.

Elle consentit à demeurer quelques jours à Nijeni pour se reposer et pour chercher les moyens de se rendre à Moscou[318] : mais bientôt elle se ressentit de ses fatigues, et tomba dangereusement malade. Depuis sa chute dans le Volga, elle avait une toux profonde qui l'incommodait[319] beaucoup. Une fièvre ardente ne tarda pas à se déclarer[320] ; cependant, quoique les médecins eux-mêmes désespérassent de sa vie, elle n'eut jamais aucune inquiétude. 'Je ne crois point, disait-elle, que mon heure

She consented to stay a few days at Nijeni to rest and seek the means to go to Moscow ; but soon she felt the effects of fatigue, and fell dangerously ill. Since her fall into the Volga, she had had a very bad cough which was very troublesome. A burning fever soon supervened ; yet, although the doctors themselves despaired of her life, she never felt any uneasiness. 'I do not believe, she said, that my time is come yet, and I hope that God will allow me to complete my undertaking.' She re-

(318) *Moscow*, the ancient capital of Russia, built on the Moskwa. It is the central point of the Russian inland trade.

(319) *L'incommodait*, literally 'inconvenienced her.'

(320) *Ne tarda pas à se déclarer* might as well be rendered by 'was not long before it declared itself.'

soit encore venue, et j'espere que Dieu me permettra d'achever mon entreprise.' Elle se remit en effet, quoique très-lentement, et passa le reste de la belle saison au couvent. Dans l'état de faiblesse où elle se trouvait encore, elle ne pouvait continuer son voyage à pied, moins encore sur des chariots de poste : n'ayant[321] aucun moyen de se procurer une voiture commode, elle se vit obligée d'attendre le traînage,[322] pour avoir la possibilité de se rendre à Pétersbourg sans éprouver la fatigue des voitures ordinaires. Elle suivit[323] pendant ce temps les offices et la règle du couvent avec une assiduité qui retarda peut-être son rétablissement, et elle se perfectionna dans ses études. Cette conduite acheva de lui gagner l'estime de l'abbesse et des religieuses, qui prirent pour elle la plus véritable affection, et ne doutèrent point qu'elle n'accomplît[324] un jour sa promesse de revenir prendre le voile dans leur couvent.

Enfin, lorsque les chemins d'hiver furent établis, elle partit pour Moscou, en traîneau couvert, avec des voyageurs qui faisaient la même route. L'abbesse, n'ayant pu lui faire abandonner son entreprise, lui donna une lettre de recommandation pour une de ses amies, Mlle. de S^{000}, à Moscou, et l'assura qu'elle pourrait toujours regarder sa maison comme un refuge certain, dans lequel elle serait reçue en fille chérie, quel que[325] fût le succès de son voyage.

Prascovie arriva dans cette dernière ville sans embarras et sans accidents. Mlle. de S^{000} eut pour elle beaucoup d'égards et de soins, et la retint quelques jours pour lui chercher un compagnon de voyage jusqu'à Pétersbourg.

Elle partit avec un marchand qui voyageait avec ses propres chevaux, et qui demeura vingt jours en chemin. Outre les lettres de recommandation qui lui avaient été remises par les dames d'Ekatherinembourg, elle en[326] reçut une de Mlle. de S^{000} pour Mme.[327] la princesse de T^{000}, personne respectable et très-âgée. Telles étaient ses ressources lorsqu'elle arriva dans la capitale, vers le milieu de février, environ dix-huit mois après son départ de la Sibérie, avec autant de courage et d'espoir qu'elle en avait le premier jour de son voyage.

Elle logea chez son conducteur, sur le canal d'Ekatherinski, et fut quelque temps comme perdue dans cette grande ville, avant de savoir ce qu'elle devait entreprendre,[328] et comment remettre ses lettres de recommandation : ce qui lui fit perdre un temps précieux.

Le marchand, occupé de son commerce, ne songeait guère à elle ; il s'était cependant chargé de[329] trouver la demeure de la princesse de T^{000} ; mais, avant d'avoir accompli sa promesse, il fut obligé de partir pour Riga,[330] laissant Prascovie sous la garde de sa femme, qui la traitait fort bien, sans pour cela lui être d'aucun secours pour ses projets.

covered, indeed, though very slowly, and spent the remainder of the fine season at the convent. In the state of weakness in which she was still, she could not continue her road on foot, still less upon post-cars : as she had not the means to procure a comfortable carriage, she saw herself compelled to wait till the sledging season, in order to be able to go to St. Petersburg without experiencing the fatigue *caused by* ordinary conveyances. She meanwhile attended the services in the church and conformed with the regulations of the convent with a punctuality which completely won for her the esteem of the abbess and nuns, who conceived for her the most friendly feelings, and did not doubt but that she would one day fulfil her promise to come back and take the veil in their convent.

At last, when the winter roads were in a proper condition, she started for Moscow, in a covered sledge, with some travellers who were going the same way. The abbess, having been unable to make her give up her enterprise, gave her a letter of recommendation for one of her friends, Miss de S. at Moscow, and assured her that she could always look upon her house as a certain home, in which she would be received as a beloved daughter, whatever might be the result of her journey.

Prascovie arrived in the latter town without trouble and without any accidents. Miss de S. showed great regard and attentions to her, and kept her a few days in order to find her a travelling companion as far as St. Petersburg.

She started with a merchant who was travelling with his own horses, and who remained twenty days on the road. In addition to the letters of introduction which the ladies of Ekatherinemburg had given her, she received another from Miss de S. for the Princess of T., a most worthy and aged person. Such were her resources when she reached the capital, towards the middle of February, about eighteen months after her departure from Siberia, with as much courage and hope as she had the first day of her journey.

She lodged at her conductor's, on the embankment of the Catherine Canal, and was for some time as lost in that great town, before she knew how to set to work, and how to deliver her letters of introduction : which made her lose some precious time.

The merchant, busy with his trade, hardly thought of her; he had, however, promised to find the abode of Princess de T. ; but, before he had fulfilled his promise, he was compelled to start for Riga, leaving Prascovie under the care of his wife, who treated her very kindly, though without helping her at all in her projects.

(*To be continued.*)

(321) *N'ayant.* At the present time the French seldom use the present participle ; its use was far more frequent at the beginning of the present century.

(322) *Le traînage*, from *traîneau*, a sledge.

(323) *Elle suivit.* The proper meaning of this verb is 'to follow.'

(324) When the verbs *douter*, to doubt, *contester*, to dispute, *désespérer*, to despair, *disconvenir* and *nier*, to deny, are used negatively, the verb of the subordinate sentence is usually put in the subjunctive with *ne* before it, unless it point out an unquestionable fact.

(325) *Quel que* invariably requires the subjunctive, and is always separated by the verb from the noun to which it refers. When 'whatever' is immediately followed by its noun, it is then rendered by *quelque . . . que* : *quelques succès que vous ayez*, whatever success you may have.

(326) *En reçut.* Whenever any of the expressions, 'of it,' 'of them,' 'some (any) of it,' or 'some (any) of them' are or could be expressed in an English sentence, the French invariably use the pronoun *en* in their place.

(327) If educated French people speak of persons with whom they are not intimate they always use the words *Monsieur*, *Madame*, *Mademoiselle*, etc., before their names ; and when they speak to, or of, their relatives they seldom fail to use the possessive adjective before their titles : *mon oncle me l'a dit*, uncle told me so ; *ma tante est venue*, aunt has come.

(328) *Ce qu'elle devait entreprendre*, literally 'what she was to undertake.'

(329) *Il s'était chargé de* may also be translated by 'he had charged himself with.'

(330) *Riga*, an important commercial town near the gulf of that name on the river Dwina a few miles before it falls into the Baltic Sea.

ELEMENTARY LESSONS IN AGRICULTURE.

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XI.

The Adaptation of Manures to Crops.

We have now discussed the different kinds of manure which are available to the farmer, and have learnt that while some supply all the food which the crop requires, others are only calculated to furnish particular ingredients when these are deficient in amount. We must presently turn to the other side of the problem, and endeavour to see what particular demands upon such stores of manures are made by the various crops of the farm.

Before doing this, however, we may remind ourselves of a few general principles which lie at the root of the question of supplying manures at all. We find first that in consequence of the reserve stores of minerals in all soils, it is not necessary always to manure land with all the constituents which the crop requires. If, indeed, we are about to grow a plant in barren sand, such a supply will be required, but no natural soil is so infertile as this. On the other hand, if we are dealing with a soil which is naturally very poor, or which has been exhausted by cultivation, we must, in most cases, add to it not only a supply of all the ash ingredients of the crop we are proposing to grow, but something further as well, in the shape of some compound of nitrogen. In the case of a soil which is less exhausted, it will suffice to add the few particular elements of food which the crop to be cultivated will have most difficulty in obtaining from it. We can, from considering these three cases, deduce the principle that nitrogen in some combined form when added to a soil which has been much impoverished or is naturally barren, will, in most cases, if all or some of the ash ingredients of the proposed crop are added with it, form a complete manure, and cause the production of a good yield.

Another fact we can discover is that by changing the crop year by year, we put less strain on the capability of the soil to develop it. Some crops require particular ingredients in greater amount than others; other crops, again, make less demand upon those substances, but need others which the first did not draw upon to any great extent. So if the crops be judiciously arranged, the land can be made to produce more in a series of years than if the same crop were raised over and over again. This is the principle which is known as that of the rotation of crops, to which we shall return later.

It often happens that the various demands made upon stores of food material in the soil by different plants can be explained by the different habit of life of the plants in question. Some may store up in their substance a good deal more of a particular constituent than others which have a shorter period of growth; or there may be a great difference in the development of the root system of the plants. Some may in this way draw a great deal of food from the subsoil, leaving the surface soil much less fully explored; others may not penetrate more than a few inches, but send out there quite a matted mass of small roots, which permeate the space they occupy very completely. Or, again, various plants, while needing the same element, prefer to have it in different forms of combination.

A supply of a particular ingredient in the soil may thus be drawn upon very differently by different crops. In some of the classical experiments carried out by Sir J. Lawes and Professor Gilbert at Rothamstead some very striking evidence upon this point has been obtained. Barley was grown for thirty-six years upon one plot manured with ammonia salts, phosphates and potash, and upon another, side by side with the first, using the same manure, except that no potash was supplied. The lack of the latter was not perceptible in the crop; indeed, the plot to which no potash was supplied bore slightly the greater number of bushels per acre. The soil here supplied the potash which the barley wanted during that long series of years. But when a crop of mangolds was grown under the same conditions there was a great falling off in the plot with no supplied potash in as short a time as five years, nearly one-third less weight of roots being collected. The mangolds drew upon the reservoir of potash in the soil in a very different way from the barley, as shown by these statistics.

It is impossible thus to calculate exactly what will be the effect upon any crop of the application of a particular mineral manure. So much must depend upon the character of the soil, both as to the quantity of its several constituents, and as to the condition or combination in which these exist, that a farmer must call in comparative experiments to his aid in ascertaining the money value of the dressing he is about to employ. He should, in fact, make trial in his fields as to the increase he obtains by any application by keeping a plot side by side with the manured one, to which he does not apply the dressing he gives to the remainder. By carrying out a series of experiments of this kind he can ascertain the value of the soil in his different fields, analysing it, as it were, by the crops which he can grow upon it, and so learning with tolerable certainty what available plant food it contains. He will thus gain a valuable knowledge of the capabilities of his soil, which no amount of chemical analysis will be able to yield him. When we consider the amount of manure a large farm requires, and the expensive materials of which such manure is composed, it will be evident that though the experiments necessary may demand much patience and care, and some little expense, they will have a very important bearing on the commercial side of his enterprise, enabling him to economise considerably in the outlay for fertilisers.

In considering this relationship of the manure to the crop, it is important to bear in mind that it is quite possible to overdo the supply. This is injurious at once from the point of view of economy, as a good deal of waste results. Many of the so-called artificial manures are very soluble in water, and are very likely to be washed out of the soil by rain. If more is supplied than the growing crop needs, it is not therefore available for a crop in the next year, but passes away with the drainage water during the first season. But besides this waste of material, too much manure may actually lead to a deterioration of the crop. Wheat and other cereals may be stimulated to excessive vegetative growth—the straw will become long and weak, and the crop runs a risk of being

battered down or *laid* by heavy rains during the period of ripening of the grain. Root-crops, such as turnips or mangolds, form very large roots, but they are of poor quality, being oversized and watery. Potatoes and many other crops, when especially too much of the expensive nitrogenous manure is supplied, develope their stems and leaves excessively, and do not form their tubers or their fruits until too late for proper maturing. If we take the case, again, of a mixed pasture, an excess of rich manure will affect the different constituents differently, causing the stronger and coarser grasses to develope more than the finer and better kinds, making the herbage rank and unpalatable to the stock.

Turning next to the question of the peculiarities of the different crops of the farm with regard to the materials which they require for their proper development and maturity, we will consider first the cereals such as wheat, barley, and oats. If we analyse a typical plant belonging to this group, we find that it contains a fair proportion of nitrogen, a good deal of phosphoric acid, and a certain amount of potash and lime. Another constituent is also very conspicuous in it, viz., silica. Comparing cereals with other crops, such as peas and beans, we find that they contain less nitrogen than these latter, while they have about the same percentage of phosphorus. The manure for them must then contain both nitrogen and phosphorus. They do not need much potash, as we saw in quoting the Rothamstead experiments a little while ago. The distribution of the constituents in the plant is interesting—of the nitrogen about 75 per cent. is found in the grain, and the remainder in the straw; the phosphorus is hardly present in the latter, being almost confined to the seed. The straw contains most of the potash and lime. The presence of the large quantity of silica found is rather astonishing. Silica is the material which makes up the substance of the grains of sand, and though extremely insoluble is yet taken up by the cereal freely, and is deposited in the outermost layer of cells of the stem and leaves. Silica appears to be of no use to the plant in most cases. It was formerly thought to be employed to strengthen the straw, and so protect the plant from being *laid* by storms of rain or wind; and when soils were deficient in it, it was supplied to them in the form of silicate of soda. It has been found, however, in late years that it is not at all necessary for this purpose. Some experiments carried out by Wolff show, however, that in the case of oats, silica may be more important, for though he found its application to make but little difference to the weight of the oat-plant, the proportion of corn was greater than usual. The experiments seem to point to silica being concerned, therefore, in some unexplained way in the formation or maturing of the seed of the oat.

There is a difference between the habit of growth of various cereals, which exercises a good deal of influence upon the mode of supplying them with manures. Wheat and rye are usually sown in the autumn, and they have a power of sending their roots much deeper down into the soil than the spring-sown barley, which develops a large root system with shorter root fibres. The latter thus draws more of its supplies from the surface soil than do the former. Barley can take up more nitrogen from the earth than wheat is able to do.

Though the cereals do not contain a very heavy amount of nitrogen, they yet profit considerably from nitrogenous manures. The reason is that they require the nitrogen to be in the form of compounds of nitric acid, which generally is not the condition of the soil nitrogen. Hence the beneficial effect often seen to follow a spring top-dressing of nitrate of soda and superphosphate.

In striking contrast to the cereals we have the class of so-called leguminous plants, peas, beans, vetches, clover, etc., which form a very large proportion of the fodder class of crops. These are very rich in nitrogen, containing at least twice as much as cereal crops, and they also contain a large quantity of potash and of lime, the latter being found in the leaf. They not only contrast with the cereals in respect of nitrogen, but very strikingly so with regard to silica. Some experiments are on record where grass crops and clover were grown side by side on the same soil, and in 100 parts of the ash of each 60 parts of silica were found in that of the grass, while only about 2 parts were present in that of the clover. The great peculiarity of leguminous crops is their power of obtaining nitrogen in some not yet explained manner from other sources than the soil. Some of them have very strong roots, which go down several feet into the subsoil. It is possible that these draw supplies of nitrogen from considerable depths thus. Others, however, are shallow-rooted, and so cannot avail themselves very largely of this store. Yet they accumulate nitrogen, and when the crop is removed from the land, the soil is richer in this element than it was before the plants were grown on it, by reason of the residue of the roots and the stubble left behind. Recent investigations have shown that this power of fixing nitrogen is somehow associated with a peculiar fungoid growth on the roots, taking the form of small swollen tubercles filled with minute organisms much resembling the germs which are called bacteria. A curious feature of the cultivation of these crops is that rich nitrogenous manures do them very little good. The quantity of potash found in them indicates that potash manures would probably help them a good deal, and this is found to be the case in agricultural practice. Lime is best supplied in the form of the sulphate, the common gypsum of commerce.

The peculiar behaviour of these leguminous plants with regard to nitrogen has led to the idea that on small farms it might be well to cultivate them to plough into the land as green manures, and so to dispense with the keeping of stock to supply farmyard manure.

Root-crops are sometimes said to be the basis of profitable farming. Undoubtedly they should be a very important part of the farmer's crop. They contain a very large amount of ash constituents, prominent among which is potash. Sulphur is also found in some of them, particularly turnips. The chief root-crops of cultivation are the mangold-wurzel, the Swede turnip, and the white turnip. These last two varieties have not very deep roots, and so draw chiefly on the surface soil. Mangolds, on the other hand, have very deep roots, and so can use some of the constituents of the subsoil. All alike can take nitrogen freely from the land, more readily indeed than the corn-crops. They differ greatly in their relation to phosphates. The phosphates of the soil are but little drawn upon by the turnips, while the mangolds can use them easily. Turnip and mangold manures will therefore differ in the proportion of

phosphoric acid which they should contain. The mangold manure should be rich in nitrogen; the turnip will require phosphoric acid as well. Such a manure as nitrate of soda will therefore be much more beneficial to mangolds than to turnips.

Potatoes are often classed with root crops, though the potato is not a root, but an underground stem. The potato tuber is developed very little below the surface, and the subsoil will therefore contribute but little to this crop. They require a liberal ground manuring, and should be supplied with considerable quantities of potash. A liberal use of Kainit is often very beneficial to a potato crop, though this is not so important when farmyard manure is employed, as the latter contains sufficient potash.

Some root crops, particularly mangolds, are often benefited by a dressing of common salt. The plants to which this is most advantageously applied are such as originally belonged to coast lands. The action of the salt seems not to be a direct one upon the plants; its benefits are probably due to the chemical changes which it sets up in the soil.

The hay crop has a good deal in common with the cereals. There is a great difference, however, between them, in that in the latter the most valuable part is the seed or grain, while the meadow crops are prized for their vegetative portions. They require to be supplied, therefore, with the ingredients which are prominent in the straw, and not in the corn. Hence, potash and lime should be supplied to them, rather than phosphates, which have a more direct influence on the seed. The grasses of pasture generally have much shorter roots than the cereals. They should be supplied with nitrogenous manures as well as those containing potash, but too copious manuring with nitrates leads to rather a rank growth and deterioration of quality. It also tends to check the growth of clover, which is an important constituent of a good pasture. Farmyard manure yields, on the whole, the best results.

The question of the supply of manures to the land, and the way in which the natural resources of the soil are taken advantage of most thoroughly, leads us to the consideration of what crops should be grown in succession to each other—that is, to the question of the proper 'rotation of crops,' as it is called, to which we shall devote some attention in the next article.

To recapitulate, we see that—

1.—In manuring, we must consider what the natural soil of a field is capable of yielding to the plants which are to be grown upon it.

2.—That nitrogenous manures in some form are necessary after the first fertility of the soil has been drawn upon.

3.—That the natural reserves of food materials can be made available much more completely by alternating crops of different constitution than by continuing to cultivate one kind of plant year after year.

4.—That different crops demand very different proportions of the several constituents of manure, each having its own special needs, which should be provided for in the manure. Thus the cereals require nitrates and phosphates; leguminous plants and roots, potash and phosphates; mangolds, also nitrogen compounds; and pastures, potash, lime, and compounds of phosphoric acid.

(To be continued.)

PUPIL TEACHERS' COURSE.

MAY.

For about half of our readers the annual test is over, and the other is beginning to feel that it is time to come to close quarters with the enemy. Whilst, therefore, all minds are on the alert, either on account of the pride of promotion to another year's apprenticeship or because coming events are casting their shadows before, it is opportune to call attention to a few faults of study and examination preparation.

In many schools, which are on the whole industriously, intelligently, and skilfully taught, the *children* do not do full justice either to themselves or their instructors from the neglect of the following five points:—

(*a*) Considerable examination practice.

(*b*) Model answers simply copied from the blackboard.

(*c*) Special attention to distasteful subjects.

(*d*) Attention to the less important subjects, such as *repetition* and *long-tots* from the very commencement of the school year; and

(*e*) Knowledge and examinational results as compared with true education.

It must not be assumed that we censure the omission of all these points; we merely say that complete success at the annual ordeal cannot be obtained if they be neglected.

And it is exactly the same with *Pupil Teachers*—(*a*) very few test papers are given or answered; (*b*) pattern answers are not enough studied; (*c*) uninteresting subjects (such as dates) are avoided; (*d*) repetition, school management, and music are deferred until almost too late; and (*e*) the examinational groove is over-run, whilst many unremunerative studies are pursued often to the detriment of the essential ones.

What really is required is that the head and pupil teacher should form a fair conception of the range of the latter's intellectual grasp, and limit or expand the curriculum in accordance.

For many the ordinary course (especially if the four Drawing certificates, one Science certificate, and a fair proficiency in Music and a language be included) is ample; and for such as these any deviation, except in the way of general reading, will be disastrous.

But there are others, by no means the majority, whose minds are ambitious and faculties acute and active, who have no thought of *ever* finishing their education, and who may be allowed to study two languages instead of one, and to pass on to more sciences and higher mathematics than the scholarship examination will utilise.

These persons are comparatively few in number, and most pupil teachers will even find that, unless in the first and second years of their apprenticeship they prepare some of the third and fourth years' work, they will be unable to keep the pace during their two final years.

Further, in these days of educational change, requirements are so suddenly raised, and dates of examination so unexpectedly altered, that they who have taken no studious thought for the morrow will often be found with their lamps gone out.

The common failings and necessities above-men-

tioned we have endeavoured to keep in mind, to remedy and provide for. Every month we insert a few questions (which every pupil teacher should answer, whether a member of our class or not); every departmental question set has its model answer published, attention is called to subjects ordinarily neglected, and whilst our routines do not stray afield, they are always a little in advance.

Once more we urge, most earnestly, that antiquated text-books and unmethodical studies should be set at once aside, and that systematised study of the best manuals be substituted.

Let every pupil teacher have a special note book and a special exercise book, for each particular subject, and in the former should be diligently and regularly entered any 'wrinkles' and supplementary information.

Each exercise book should have all its entries dated, and none of these books should ever be destroyed. In fact, H.M. Inspector is instructed to call for their productions at his yearly visit.

Reading to the head teacher, repetition, dictation, composition, dates, school management, and, in the case of girls, geography and domestic economy should not be lost sight of.

The poem from which the repetition is selected should be read through aloud, and questions may be asked as to its general drift and scope.

H.M. Inspector will test the Teaching, Reading and Recitation of any Pupil Teacher, Additional Teacher, (Art. 68) or any other person employed in a school, who may propose to attend the Queen's Scholarship Examination before the next Inspection of his school.

Therefore any *Third Year* Pupil Teacher, the inspection of whose school takes place after the 6th of July 1892, should either be ready, at the inspection, with the repetition of both Third and Fourth Years, or the Head-Master should especially arrange with H.M.I. to hear the Fourth Year Repetition, etc., during the first half of 1893. We have received from Cassell and Co. an excellent book of the *Citizen Reader Series* written by Mr. H. Arnold-Forster and entitled '*This World of Ours.*' It is a work that in no wise can be substituted for a formal Geographical Text Book; but the greater liberty taken by the author allows him to treat most interestingly and suggestively upon many points respecting which 'Catch' and 'Side Questions' are set.

Now that many rural County Councils are urging forward and facilitating the subject of agriculture we are repeatedly asked to recommend books on agriculture, other than and supplementary to the principal examination manuals; such inquirers will find '*Farm Crops*' by Professor Wrightson and '*Soils and Manures*' by Professor Munro, admirable works. Messrs. Cassell publish both.

The following table has been found useful in defining geometrical ideas :—

	Dimensions.	Minimum No. of Boundaries.	Dimensions of Boundaries.
A Solid has	3	4	2
,, Plane ,,	2	3	1
,, Line ,,	1	2	0
,, Point ,,	0	1	0

We would again urge upon our Girl Readers not to neglect their Domestic Economy until their Fourth Year.

One of the sums (the third) just set for First Year boys is an amusing little trap:—'*Express as decimal* $\frac{552}{2^5 \times 5^5}$ etc.' (For the whole sum, see Model Answers of this issue). We ourselves saw pupils filling up two sides of foolscap in its working, instead of as follows $\frac{552}{2^5 \times 5^5} = \frac{552}{10^5} = \cdot 00552$, etc.

Any whole number divided by 10 has one decimal place; divided by 10^2, two decimal places, etc.

(*For Correspondence, see end of Certificate Article.*)

First Year.

1. *Boys.*—Simplify $\frac{\cdot 875 \times \cdot 276}{\cdot 125 + \cdot 125675} + \frac{3}{53}$. Ans. 1.

Girls.—What is the least sum of money I could pay with coins worth 5s. 10d. each, *or* 5s. 6d., *or* 7s. 6d?

Ans. £28 17s. 6d.

2. Explain when and why it is necessary to bring fractions to a common denominator, and add together $\frac{1\frac{3}{4}}{3\frac{5}{7}} + \frac{\frac{3}{4}}{1\frac{6}{7}} + \frac{117}{351}$.

Ans. 1.

3. Write in large hand the word '*Eulogistically.*' Write in small hand the words '*Happy who walks with Him.*'

4. Analyse the following passage and parse the italicised words—

He *sets* the bright *procession* on *its* way,
And marshals *all* the *order* of the Year.
He marks the bounds *that* winter *may not pass*
And blunts *its* pointed fury.

5. Write a short essay upon '*Kindness to Animals.*'

6. In how many ways may verbs be classified? Give instances.

7. Draw a map of the western coast of Scotland, showing the Hebrides, both inner and outer.

8. What are mountain knots, mountain axes, and sierras? Mention the chief volcanic bands.

9. Give some account of the plant and animal life of Australia, and its mineral products.

10. Whence do we obtain our knowledge of the Roman period of British History?

11. What do you know of the Saxons as regards their country, race, and manners before their conquest of England?

12. Decline *templum*, OR write out the French cardinals and ordinals up to 20 and 20th.

13. Define the terms *scale*, *pulse*, *measure*, and *accent*.

14. What should be the size of the long letters in ordinary small hand?

Second Year.

1. *Boys.*—At what rate per cent. per annum will £765 amount to £872 2s. in four years?

Ans. 3½ per cent.

Girls.—Divide £17 17s. between A and B so that ⅔ of A's money shall be ⅘ of B's money.

Ans. £9 9s.; £8 8s.

2. Show that $8 \times 9 = 9 \times 8$. What are the shortest ways of multiplying by 25, 125, 99, and 110?

3. Writing as in First Year.

4. Name the chief animal, vegetable, and mineral productions of Spain. What are its chief industries?

5. Describe fully the basin of the Ganges.

6. Draw a map of France, showing the chief towns and productions.

7. Paraphrase the following :—

Two such I saw, what time the laboured ox
In his loose traces from the furrow came,
And the swinked hedger at his supper sat.
I saw them under a green mantling vine,
That crawls along the side of yon small hill,
Plucking ripe clusters from the tender shoots.

PUPIL TEACHERS' ROUTINE FOR MAY.

DAYS	YEARS	FIRST WEEK			SECOND WEEK			THIRD WEEK			FOURTH WEEK		
		1st Lesson	2nd Lesson	3rd Lesson	1st Lesson	2nd Lesson	3rd Lesson	1st Lesson	2nd Lesson	3rd Lesson	1st Lesson	2nd Lesson	3rd Lesson
Monday	1	Analysis and Parsing	Measures and Multiples. Practice	Literature, Repetition, and Writing	Analysis and Parsing	How to teach Reading	History from 78 to 121 A.D.	Analysis and Parsing	How to teach Writing	Geography of British North America	Composition or Paraphrasing	How to teach Arithmetic	Physical Geography of Mountains
	2		Theory of Proportion. Multip. of Vulgar Fractions				History from 1087 to 1106 A.D.			Geography of India			Longitude
	3		Square Root Addition and Subt. of Decimals			How to teach Geography	History from 1510 to 1535 A.D.		How to teach Grammar.	Geography of Africa		How to teach Composition	Winds
Tuesday	1	½ of Euclid's Def. Book I. Garment with req. stitches	Geography of England	Scripture or Revision	½ of Euclid's Def. Garment with req. stitches	Geography of England	Scripture or Revision	Post. & Ax. of Euc. Book I. Garment with req. stitches	Any Revision	Scripture or Revision	Euc. Bk. I., Prop. 1. Stocking-hole Mending	Add. of Algebra. Garment with required stitches	Scripture or Revision
	2	½ of Euclid's Def. Book I. Garment with req. stitches	Geography of Europe		All Euclid's Def. Garment with req. stitches	Geography of Europe		Props. 1 & 2 Euclid Book I. Garment with req. stitches			Euc. Bk. I., Props. 3, 4. Calico Patch	Subt. of Algebra. Garment with required stitches	
	3	Revise first 13 Props. Garment with req. stitches	Geography of Asia		Revise first 26 Props. Garment with req. stitches	Geography of Asia		Props. 29, 30, Euc. Book I. Garment with req. stitches			Euc. Bk. I., Props. 31, 32. Hedge-tear Darn	Multip. of Algebra. Garment with required stitches	
Wednesday	1	History from 55 B.C. to 78 A.D.	Introductory Algebra to end of Addition. Garment with the required stitches	Any Advanced Work	Dates from 55 B.C. to 121 A.D.	Composition or Paraphrasing	Any Advanced Work	History from 121 to 410 A.D.	English from Text Book	Any Advanced Work	History from 410 to 787 A.D.	Prefixes, Roots, or Affixes	Any Advanced Work
	2	History from 1066 to 1087 A.D.			Dates from 1066 to 1106 A.D.			History from 1106 to 1153 A.D.			History from 1153 to 1189 A.D.		
	3	History from 1485 to 1510 A.D.			Dates from 1485 to 1535 A.D.			History from 1535 to 1553 A.D.			History from 1553 to 1572 A.D.		
Thursday	1	Simple Practice	Introductory Algebra to end of Addition. Garment with the required stitches	Map of England	Addition and Subtraction of Algebra. Garment with required stitches	Euclid Definitions. Book I. Garment with req. stitches	Any Revision	Political Map of England	Composition or Paraphrasing	Literature, Repetition, and Writing	Geography of England	Literature of Anglo-Saxon Period	Any Revision
	2	Mixtures. The different kinds of Vulgar Fractions		Map of France		Post. and Axioms. Book I. Garment with req. stitches		Map of France			Geography of Europe	Literature of Norman Period	
	3	Square Root. Multiplication of Decimals		Map of India		28 Props. Book I. Garment with required stitches		Map of India			Geography of Asia	Literature of Tudor Period	
Friday	1	Measures and Multiples, Practice	Any Advanced Work	Any Advanced Work	Common Denom., Bills of Parcels, and Lowest Terms	Any Advanced Work	Any Advanced Work	Addition of Vulgar Fractions. Practice	Any Advanced Work	Any Advanced Work	Subtraction of Vulgar Fractions. Bills of Parcels	Dates from 121 to 410 A.D.	Any Advanced Work
	2	Simple Proportion Division of Fract.			Simple Proportion Multiplication of Vulgar Fractions			Comp. Proportion. Division of Vulgar Fractions			Compound Proportion. Complex Fractions	Dates from 1106 to 1189 A.D.	
	3	Mensuration of Squares. Division of Decimals			Mensuration of Rects. Mult. and Div. of Decimals			Equat. of Paymts. Reduct. of Vulgar Fract. & Decimals			Present Worth. Reduct. of Vulgar to Dec. Fractions	Dates from 1535 to 1572 A.D.	
Saturday	1	Language	Science	Drawing	Music	Language	Science	Drawing	Music	Language	Science	Drawing	Music
	2												
	3												

Their port was *more than human, as* they stood
I *took* it for a *fairy* vision
Of *some* gay creatures of the element,
That in the *colours of* the rainbow *live*,
And play i' the *plighted* clouds.

8. Analyse the first *six* lines of the above passage and parse the italicised words.

9. What prefixes are employed in the following words? Give their meanings and another instance of their use. *Aggregate, viscount, anticipate, surcharge, combine, surrender.*

10. What are the chief events connected with the following dates:—1098, 1169, 1217, 1282, 1314, and 1415?

11. Mention the events with which Joan of Arc, Piers de Gaveston, Hotspur, John Ball, and Lord Stanley were connected.

12. *Boys.*—Write out Euclid I. 13.

If a straight line bisect an angle, the straight line drawn at right angles to it from the vertex of the angle bisects the supplementary angle.

Girls.—Describe the different methods of knitting the heel of a stocking.

13. Write out the Indicative Mood of *finir*, OR decline *fructus* and *res*.

14. Write out the commonest compound times, OR four bars each of three, six, and nine pulse measure.

THIRD YEAR.

1. *Boys.*—A straight pole was partially broken 52 feet from the bottom, and fell so that the top struck the ground 39 feet from the foot. Find the length of the pole.

Ans. 117 feet.

Girls.—What decimal part of £20 is equal to ·26$\dot{3}$ of £1 7s 6d.?

Ans. ·018125.

2. Show the necessity of dividing by prime numbers in finding the L.C.M. of more than two numbers. Give illustrative examples.

3. Writing as in First Year.

4. Briefly describe the soil, climate, situation, and give the area of Japan. In what respects does it resemble the British Isles?

5. What do you know of Monsoons?

6. Draw a map of South Africa.

7. Paraphrase the following:—

If your stray attendants *be yet lodged,*
Or shroud within these limits, I shall *know*
Ere morrow *wake*, or the low *roosted* lark
From her thatched pallet rouse, if *otherwise*,
I can *conduct* you, lady, to a low
But loyal cottage, *where* you may *be safe*
Till further *quest*.

8. Analyse the foregoing passage and parse the italicised words.

9. What classes of words are British, Latin, and modern French?

10. What events render the following dates noteworthy:—1492, 1534, 1558, 1600, 1666, and 1685?

11. With what events are Tyndale, Ket, Wyatt, Babington, Catesby, and Blake?

12. Write out Notes of a Lesson on Discount.

13. Conjugate the Verb *Conduire*, OR *Capio, cepi, captum, capere.*

14. *Boys.*—Write out Euclid I. 37.
To construct a triangle equal to a given quadrilateral.

Girls.—Draw a diagram ($\frac{1}{4}$ size) of a full-sized chemise on sectional paper.

15. *Boys.*—Divide a^3 by $(a + x)^2$ to 5 terms in the quotient.

Ans. $1 - \frac{2x}{a} + \frac{3x^2}{a^2} - \frac{4x^3}{a^3} + \frac{5x^4}{a^4}$.

Girls.—Give directions for stewing a rabbit.

16. *Boys.*—The sides of a triangle are in the proportion of the numbers 13, 14, 15, and the perimeter is 70 yards. Find the area.

Ans. 2,100 square feet.

Girls.—Describe the outfit of a servant girl of 14 years of age.

17. Express as dotted notes 3 semiquavers, 3 quavers, 3 semibreves, 3 minims, 3 crotchets.

IN THE BABIES' ROOM: WHAT TO DO, AND HOW TO DO IT.

By J. W. WARREN,
Inspectress of Infant Schools, Leicester School Board.

MY remarks this month will be on the interesting and exceedingly simple occupation of making *wool balls*. Perhaps the work is more artistic than any other that we can conveniently put into the babies' room, for by the simplest arrangement of materials a beautiful combination of colours and shades may be made. This I will explain at the end; for the present let me say that by means of work in ball-making there is an equal amount of use with the *right* and *left* hand; it is well to consider this when working with babies, as there is a great tendency to use the right, if not entirely, yet more than the left. All trades, manufactures, and the like require almost an equal use, but if studied one by one it will be found that the left is more often than not the supporter of the work; the right, the mover or the wielder of the implement that is used. It is exactly in these particulars that the great value of this babies' work lies. The movements which for the sake of simplicity I have named *over* and *through*, together with the work of left hand (the *holding*) are identical with most operations in primitive labour, differing only in details unimportant. In the net-making, building, sewing, etc., we can clearly trace the same fundamental movements. Teachers should make a study of every kind of work before it is introduced into their classes; it would aid them much in many ways, and greatly add to their intelligent teaching of all things. Young teachers will quickly degenerate into mere perfunctory machine-workers if they do not endeavour to look into the very heart of things from the beginning of their career. Books are almost worthless in the matter. The writer knows of no better way than to search into natural laws and causes, and she has thought it necessary to say these few words, as they seem to bear directly upon the subject. Better no occupations than to have them so ill-advised and ill-considered as to render them morally worthless. Ball-making, in addition to colour teaching, is a simple incentive to perseverance, coming from a necessary continued effort and regularity.

The Wool Ball, when made is, in addition to being a favourite in the nursery, the first suggested gift of the Kindergarten series, and might be used in the room; not in place of the first gift, but in addition to it, so with its own little hands the baby may give pleasure by making a useful article; surely this is an early Slöjd worth considering.

The following things will be required for a start:—

Old cardboard boxes, worn-out letter cards or millboard, wool or knitting cotton, a pair of scissors, compasses, and blacklead pencil.

Mode.—Take any ordinary ball of the size you require yours to be when finished, measure its diameter with a knitting needle. With a pair of compasses describe circles, half the size of this diameter, upon the old cardboard. Now set the compasses to half-inch, and describe a circle within the other. Give this prepared pencilled cardboard into the first class of an infants' school. A very good hour's work will be for the girls to cut the outer circle with K. G. scissors,

and the boys the inner with a K. G. knife. All the rest of the work can be done by the babies, except the first knot in the start. No joins are necessary after the start.

Method of Work for the Little Ones.—Give to each child *two circular* cardboard pieces just tied together with the end of a small ball of either wool or knitting-cotton. Notice *this ball* or *twist* must be small enough to push through the middle *hole* of the cardboard.

When all are supplied thus, you will begin the play with such direction as this :—

Each child hold up the double cardboard in his left hand (see that this is *clutched* by the child just opposite where the two are tied) ; now the wool hangs suspended from the foundation. Next, pupils pick up the twist with the left hand.

Children must hold their cards very steadily and firmly with the left hand, and when directed, work from *left* to *right*, and each strand of wool must lie close or partly upon the one before. Give your order in this way: Hold your card up and *peep through it.* Hold it down ; hold it up again ; look behind it ; peep through from behind ; now peep through from in front (the object here is to teach front and back). Now continue your direction in any way you like, *but by direction* and *your own work.* The rules followed by myself, and answering well, are 1st. *Over*, which causes the child to lift his twist up and over the edge of card *to the back of it* ; 2nd. *Through*, which causes him to push his twist *through centre from the back to front.* This is the whole of the movement needed, and will, with care on the part of teacher, enable the feeblest child to make a fairly good ball. Each movement causes a thread to bind the two cardboards together, the left hand regulating the work by moving the wheel round and round, the first two or three weeks will just cover the cardboard, but the ball will take, perhaps, *three months to make.* You will get variety by changing the colour of the wool, and the work should be continued until the middle hole only admits of a baby *threader* passing through instead of a twist of the material. The general orders should be to hold the cardboard *firmly*, and pull the wool over *tightly.* It will be seen that the actions are exceedingly primitive and that it is by *continued simple work.* The ball will be made a valuable factor in early education, but one that may tend to have a very deadening effect on the intellect if in the hands of an unconscientious teacher. *Perseverance* and *regular work* only produce result ; but on the other hand, babies must not be kept at work *more than twenty minutes*, or the play will become mechanical and tedious. After each lesson look to each ball and add another twist of a different shade or colour ; do not tie this to the end, tuck it under part of the work done where the other piece ends. These colours must be talked about in the class, and the work must not degenerate into quiet monotony.

When the balls are worked so that the centre is quite closed, the teacher must cut the wool through the edge, round the rim, thus disclosing the two edges of card ; then take a strong thin string, insert it *between the cards*, tie it very tightly to secure the middle, break up the cardboards in one place, pull them out and let the children see the wonderful movement of the cut strands gradually springing out, and forming the beautiful, soft ball ; let them find the colours again, and keep a ball *half done*, *just begun*, and *just finished* for examples of reference.

Let the first balls made be given away, each child his own. Now as to the expense of this play. It has been found that *little bits of knitting* done in Standards I. and II. do splendidly to work with ; they need no undoing, but come undone while being *passed over* and *through.* These are made in coloured cottons and answer as well as the wool for all purposes.

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LONDON MATRICULATION.

JUNE, 1892.

OUR PREPARATION CLASS FOR PRIVATE STUDENTS.

BY T. RUSSELL MALTBY, M.A.
Kingswood School, Bath.

(FIFTH MONTH.)

Every candidate must apply to the Registrar for a form of entry *before May 9th.* This must be returned *before May 16th*, accompanied by a certificate showing that the candidate has completed his sixteenth year, and by his fee for the examination.

I. LATIN.

Notes on April Work.

Allen's Grammar, Sects. 154-163.

(1) The meanings of the nouns given in the rules for gender should be learnt. The lists also afford useful exercise in declension, *e.g.* :

(2) *Vates* (Sect. 154) has gen. pl. *vatum* or *vatium.* There are about thirty-five nouns in *-es*, *-is* like *nubes.* Notice also the following nominatives in *-es* :

Cerēs, Cerĕris (f.).

Pēs, pĕdis (m.) ; so *quadrupes* (m.), *compes* (f.), *quiēs, quiētis* (f.) ; so *inquies, requies* (f.), *lebes* (m.), a caldron ; *magnes* (m.), a magnet. *Ariēs, ariētis* (m.) ; so *paries* (m.), *abies* (f.). *Interprēs, interprĕtis* (c.) ; so *seges, teges* (f.). *Obses, obsidis* (c.) ; so *praeses* (c.), a protector.

Comes, comitis (c.) ; so *ales*, and about twenty nouns.

Heres, heredis (c.) ; so *praes* (m.), a surety ; *merces* (f.).

(3) *Sacerdos, sacerdōtis* (154) ; so *nepos* (m.), *cos, dos* (f.).

Custos, custōdis (154), a solitary instance.

Notice also the following nominatives in *-os :*

Flos, flōris (m.) ; so *mos, ros* (m.), *glos* (f.), *ōs* (n.). *Bos, bovis ; heros, herois ; ŏs, ossis.*

(4) *Vindex, vindĭcis* (154) ; so about forty nouns.

Notice also the following nominatives in *-ex :*

Nex, necis (f.) *Vervex, vervēcis* (m.), a wether. *Supellex, supellectilis* (f.) [abl. *-i* or *-e*]. *Senex, senis* (m.) [gen. pl. *senum*].

(5) *Adolescens, adolescentis* (154). This is said to be the *verbal* form, *adulescens* the *substantival.* Gen. pl. usually *-ium.* Beside participles used as nouns, about twenty nouns are declined like *adulescens* (e.g., *mons*). *Infans* has gen. pl. *-ium. Frons, frondis* (f.) ; so *glans, inglans* (f.)

(6) *Dux, dŭcis* (154) ; so *crux, nux* (f.) Notice also *lux, lūcis* (f.) ; so *balux* (m.)

(7) *Coniux, coniugis* (154) ; so *grex* (m.), *rex* (m. or c.), *lex, phalanx* (f.), and *remex, remigis.* Like *arx, arcis* (f.) are *calx* (two words), *falx, lynx, merx* (f.), *calyx* (m.)

(8) *Auctor, auctōris* (154) ; so about seventy nouns, all masculine except *uxor* and *soror.*

Arbŏr, arbŏris (f.); so *castor, rhetor* (m.), *ador, aequor, marmor* (n.)

(9) *Exul, exulis* (154); so eight nouns masculine, and *sŭl* and *sāl* (n.) Notice *fel, fellis*, and *mel, mellis* (n.)

(10) *Tigris, tigris* or *tigrĭdis* (154). There are about one hundred vowel-stems (like *testis, civis*, etc.), and about forty dental-stems (mostly Greek), like *lapis, lapidis* (m.) *Cinis, cinĕris* (m.); so *cucumis, pulvis, vŏmis* (m.) Notice also *glis, gliris* (m.), *lis, litis* (f.), *sanguis, sanguinis* (m.)

(11) *Grūs, gruis* (154); so *sūs, suis. Rhūs, rhois* has acc. *rhum.* Other nominatives in *-us* are—

Genŭs, genĕris (n.); so about twenty neuters and *Venus* (f.)

Pectŭs, pectŏris (n.); so twelve neuters and *lepus* (m.)

Tellūs, tellūris (f.); so *mus* (m.), *crus, ius, pus, rus, tus* (n.)

Palūs, palūdis (f.); so *incus, subscus* (f.), *fraus, laus* (m.) *Pecus* (f.), *pecŭdis.*

Virtūs, virtutis (f.); so *iuventus, salus, senectus, servitus* (f.)

Tripus, tripŏdis (m.); so other compounds.

(12) Sect. 155. *Carbasus* (f.), linen, plural *carbasa* (n.), sails. *Arctus* and *methodus*, as Greek nouns, retain their original gender (f.) *Pelagus*, plural *pelage. Vulgus* is rarely masculine. *Cete*, sea-monsters, has no nom. sing.

(13) *Cadavĕr, cadavĕris* (155); so *agger, anser, carcer, vesper*, and a few other masculines; *mulier* (f.); *tūber, tŭber, ūber, verber*, and a few other neuters.

Accipiter, accipitris (m.); so *pater, mater, frater.* These are consonant-stems, and have gen. pl. in *-um. Imber* (*imbris*), *linter, ūter, venter*, are vowel-stems, and have gen. pl. in *-ium.*

Vēr, vēris (n.); so *crater* (m.) and one or two Greek nouns.

Aĕr, aĕris (m.); so *aether* (m.)

(14) *Cor, cordis* (155). Note also *far, farris* (n.), *iter, itineris* (n.)

(15) *-ᵈᵢₒ, -dinis;* about fifty feminines, and *cardo, ordo* (m.)

(16) *-ᵢₒ -ionis;* about 180 abstract and collective nouns (f.), and about thirty like *pugio* (m.)

(17) *-ūs, -ūtis;* so many nouns like *civitas* (gen. pl. *-um* or *-ium*). Notice *anŭs, anūtis* (c.) *vās, vădis* (m.); so a number of Greek feminines. Notice also *as, assis* (m), *vās, vāsis* (n.), *mas, māris* (m.)

(18) *Fornix, fornĭcis* (155); so *appendix, salix*, and a few other feminines.

Phoenix phoenīcis (m.): so *cervix, radix*, and about thirty other feminines, besides nouns in *-trix.*

(19) *Furfūr, furfūris* (155); so nine masculine nouns and *fulgur, guttur, murmur, sulfur* (n.)

Fūr, fūris (c.), a solitary instance.

Ebŭr, ebŏris (n.); so *femur, robur, iecur* (*iecinŏris*, or *iecŏris*), all neuter.

(20) *Delphin, delphīnis* (m.); *splen, splēnis* (m).

Tibicĕn, tibicĭnis (m.); so about ten masculines, but all nouns in *-men, -minis* (like *nomen*) are neuter, except *flamen* (m.)

(21) A complete scheme of 3rd declension nouns was given in THE PRACTICAL TEACHER of November, 1891.

(22) Sect. 161. Look up the gen. sing. of all these adjectives. Declension of *iens*, going; *dives*, rich; *pūbes*, grown up:—

iens		*euntes*	*euntia*
euntem	*iens*	*euntis(es)*	*euntia*
euntis		*euntium*	
eunti		*euntibus*	
eunte(ī)		*euntibus*	

dives		*divites*	[*ditia*]
divitem	*dives*	*divitis(es)*	*divitia*
divitis		*divitum*	
diviti		*divitibus*	
divite		*divitibus*	
pubes		*puberes*	*pubera*
puberem	*pubes*	*puberes*	*pubera*
puberis		*puberum*	
puberi		*puberibus*	
pubere		*puberibus*	

(23) Sect. 162. *Comparison.* With *quam, vel*, or *unus* a superlative denotes the highest possible degree. *Quam plurimi*, as many as possible; *virum unum doctissimum*, the one most learned man. Notice also the idiom with *quisque:—optimus quisque*, all the best. *Maiores* as subst. means *ancestors; minores, descendants.*

(24) Sect. 163 (l). Nouns which vary their meaning in the plural. Look up also *bonum, cedicillus, comitium, fides* (3rd), *fortuna, hortus, natalis, pars, rostrum, tabula.*

Latin Course for May.

1. *Allen's Grammar, Sects. 164-175, 180-183, 196-208.*
2. *Allcroft and Haydon, Sects. 260-316.*
3. *Allcroft and Haydon, Exercises XVII., XVIII., XIX., XX.* A's and B's only.
4. *Vergil, Aeneid VII., 406-817.*
5. *Translation at sight. Hardy's Reader*, Nos. 199, 203, 207, 209, 220, 221, 225, 228.

II. GREEK.

Notes on April Work.

Xenophon, Anabasis IV., Chapters V., VI.

Sect. 4. εἶπε σφαγιάσασθαι, *told them to sacrifice*; ἔφη σφαγιάσασθαι would mean *he said that he had sacrificed.*

Sect. 5. *And they got through the night by keeping up a fire (of wood)*, etc. The accusative with μεταδίδωμι must denote the *part* given rather than the *whole* of which a part is given.

Sect. 6. ἔνθα δή *thereupon*; ἔνθα δέ *and where.* ἔστε, ἄχρι and μέχρι may be used to emphasise εἰς or ἐπί; *right down to.*

Sect. 27. συμμαθόντι *to one used to it.*

VI. Sect. 12. βρθιον . . . ὁμαλὲς ἰέναι *to march up hill . . . over level ground.*

Sect. 16. ἀλλὰ μέντοι *but really*; καὶ μέντοι *and in truth.*

Greek Course for May.

1. *Abbott and Mansfield, Sects. 1-100* (Revision).
2. *Abbott and Mansfield, Sects. 53-65, 80-83, 86-121.*
3. *Xenophon, Anabasis IV., Chapters VII. and VIII.*
4. *Translation at Sight, Initia Graeca, Part II.* Grecian History, Nos. V. and VI. (Pausanias and Themistocles). About two pages a week. We advise written work.

FRENCH.

Notes on April Work.

Breymann. Adjectives and Pronouns.

(1) The position of adjectives is an important subject, not treated in Breymann. The following are exceptions to the rule that the adjective follows the noun: *beau, bon, cher, digne, excellent, gentil, grand, gros, jeune, joli, long, mauvais, méchant, meilleur, moindre, nouveau, petit, vieux, vilain.*

(2) More general rules are that (*a*) adjectives which express *nationality, shape, colour*, polysyllables and participles follow the noun, whilst (*b*) adjectives used in a *figurative* sense precede the noun. In poetry and elegant prose adjectives often precede the noun.

(3) Many adjectives have a different meaning according as they follow or precede the noun. Compare—*bon homme* and *homme bon, brave homme* and *homme*

brave, commune voix and *voix commune, dernière année* and *année dernière, fausse porte* and *porte fausse, grand homme* and *homme grand, haut ton* and *ton haut, honnête homme* and *homme honnête, méchante épigramme* and *épigramme méchante, seul homme* and *homme seul, nouveaux livres* and *livres nouveaux, plaisante histoire* and *histoire plaisante, mauvais air* and *air mauvais*. Similarly *petit, malhonnête, fier, même, simple, propre, différent, certain, furieux*, and others.

(4) The rules for the place of the personal pronouns (pages 131-2) should be thoroughly mastered. The following will be found useful :—

(*a*) When the pronouns are of the same person, the French order is the same as the English: *Je les lui ai donnés.*

(*b*) When they are of different persons the English order is inverted: *Je vous* les ai donnés.

(*c*) *Y* and *en* are placed immediately before the verb. When both occur with the same verb, *y* precedes *en*.

(*d*) In the Imperative Mood, affirmative form, the pronouns are placed in the same order as in English.

(*e*) But notice *prepares-y-toi* for the sake of euphony.

French Course for May.

1. *Breymann, from Relative Pronouns to Interjections.*
2. *Fasnacht, Extracts 15, 16, 20, 34, 35, 36, 47, 78, 79, 80.*
3. *Written Translations of 20 and 35* in the above list.
4. Professor Darqué's *La Jeune Sibérienne.*
5. *Word Lists* and *Phrase Lists.*

III. ENGLISH.

Course for May.

1. *Mason, pp. 112-160.* (Prepositions, Conjunctions, Composition and Derivation, Syntax of Subject, Predicate, Adjuncts, etc.) The history of the meanings of prepositions is good work. A shorter account is given in *Hewitt and Beach.*

2. *Hewitt and Beach, pp. 212-285.* (Prepositions, Conjunctions, Interjections, Syntax of the Noun). The 'Answered Questions' are very valuable.

3. *Prosody and Analysis.* Continued practice.

4. *English History, 1628 to 1685, with the Geography relating thereto.*

IV. MATHEMATICS.

Note the following methods :—

(1) To find the value of $a^2 - b^2 - (a - b)^2$, when $a + 2b = 13$ and $2a + b = 32$.

Solving the simultaneous equations

$a + 2b = 13$ and $2a + b = 32$,

We find $a = 17$, $b = -2$,

$\therefore a^2 - b^2 - (a - b)^2 = -76$.

(2) Show that if $x = pq$, $y = qr$, $z = rs$, and $x + y + z = ps$, then $(x + y)^2 + (y + z)^2 = (x + z)^2$.

The last is true if

$2y^2 + 2xy + 2yz = 2xz$, that is, if

$y(y + x + z) - xz = 0$, that is, if

$qr \times ps - pq.rs = 0$, which is the case.

Course for May.

1. *Arithmetic.* Continued practice in answering London questions.

2. *Algebra, Capel, Chapters XXXVII., XXXVIII., XLI.* (Square Root only). Work examples from Chapters XLI. and XLII., write formal answers to a number of the questions in Chapter L., and study recent London papers.

3. *Hall and Stevens's Euclid, pp. 215-249.* (Theorems and Examples on Book III.), *with Revision of Book III.*

V. MECHANICS.

1. *Magnus, Chapter VIII.* (Centre of Gravity).

2. *Hamblin Smith's Hydrostatics, Chapters I.* and *II.* (Fluid Pressure, Pressure of a Fluid acted on by Gravity). In both subjects knowledge of the bookwork and facility in working examples are alike important. The harder questions in Hamblin Smith may be omitted. Dibb's 'Worked Examples' affords valuable training.

VI. CHEMISTRY.

Kemshead, Chapters VI., XIV., XV., XVI, XVII, XVIII. (Atomicity, Nitrogen, Sulphur, Combustion). Briggs's 'Synopsis' will greatly assist candidates in revising these chapters. Here also practice is necessary in calculations.

HEAT AND LIGHT.

Stewart, Light, Chapters V-VIII. (Reflexion at Spherical Surfaces, Refraction, Dispersion).

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PUPIL TEACHERS' EXAMINATION.—MODEL ANSWERS.

9th APRIL, 1892.

FIRST YEAR.

BOYS.

Arithmetic.

1. Reduce 12 acres 2 roods 12 poles to the fraction of 2 acres, and multiply £37 10s. by the result.

(*a*) 12 acres 2 roods 12 poles = 2,012 poles.
2 acres = 320 "
∴ Fraction required $= \frac{2012}{320} = \frac{503}{80}$

(*b*) £37 10s. $\times \frac{503}{80}$ = 9s. 4½d. × 503 = £235 15s. 7½d. Ans.

2. Express as a decimal $\frac{552}{2^3 \times 5^3} + \frac{923}{2^3 \times 5^7}$

$\frac{552}{2^3 \times 5^3} + \frac{923}{2^3 \times 5^7} = \frac{552}{10^3} + \frac{923}{10^3 \times 5^2} = \cdot00552 + \frac{\cdot00923}{25} = \cdot00552 + \cdot0003692 = \cdot00588892$. Ans.

3. (*a*) Simplify $\frac{5\frac{3}{4} - 2\frac{3}{5}}{4\frac{5}{8} \times 1\frac{1}{185}}$.

(*b*) Multiply the sum of ·0083 and ·8003 by 8·003.

(*a*) $\frac{5\frac{3}{4} - 2\frac{3}{5}}{4\frac{5}{8} \times 1\frac{1}{185}} = \frac{\frac{17}{3} - \frac{13}{5}}{\frac{37}{8} \times \frac{2}{185}} = \frac{\frac{85 - 39}{15}}{\frac{1}{20}} = \frac{46}{15} \times \frac{20}{1} = 61\frac{1}{3}$. Ans.

(*b*) (·0083 + ·8003) × 8·003 = ·8086 × 8·003 = 6·4712258. Ans.

4. (*a*) Why must the addition of Fractions with different denominators be effected by reducing each of the fractions to a common denominator?

(*b*) Subtract $4\frac{3}{35}$ from $\frac{4}{21} + 13\frac{3}{10} + 2\frac{1}{7} + \frac{1}{5}$.

(*a*) Fractions may be accounted *concrete*, if we remember that their denominators are merely the names of each unit of the numerator.

Concrete articles of different kinds cannot be added together without some common name or common denominator be found for their sum.

Thus, 3 pigs and 5 dogs do not make 8 dogs or 8 pigs, but 8 *animals*. Here it happens that the numerical relation between pigs and animals and dogs and animals is that of unity, viz., 1 pig = 1 animal, and 1 dog = 1 animal.

But in the case of 5 fourpences + 7 threepences, the common denomination must be pence, and the ratios between 4d. and 1d. and between 3d. and 1d. are not the same. We cannot, therefore, add 5 and 7 and call the answer 12 pence, etc., but must reduce 5 fourpences to 20d. and 7 threepences to 21d., and then their sum is 41d.

Similarly, $\frac{2}{3} + \frac{3}{4} = 5$ *thirds*, and 7 *fourths* = 20 *twelfths*, and 21 *twelfths* (for each *third* = 4 *twelfths* and each *fourth* = 3 *twelfths*) = 41 *twelfths*.

(*b*) $\frac{4}{21} + 13\frac{5}{10} + 2\frac{1}{7} + \frac{3}{6} - 4\frac{33}{55} = \frac{4}{21} + \frac{13}{10} + \frac{1}{7} + \frac{1}{6} - \frac{33}{55} + 10$

$= \frac{40 + 273 + 30 + 35 - 198}{210} + 10 = \frac{180}{210} + 10 = \frac{6}{7} + 10 =$

$10\frac{6}{7}$. Ans.

GIRLS ONLY.

1. If 14,400 lbs. of wool were bought at $5\frac{1}{2}$d. and sold at $6\frac{1}{2}$d. a lb., what was the gain?

Gain per lb. $= 1\frac{1}{2}$d.

$\therefore$ Gain on 14,400 lbs. $= 1\frac{1}{2}$d. $\times$ 14400 $= \frac{1}{2}$s. $\times \frac{14400}{1} =$ 1s. $\times$ 1800

$=$ £90. Ans.

2. Simplify $6\frac{7}{8} - 8\frac{3}{4} + 7\frac{3}{5}\frac{1}{5} - 4\frac{1}{10}$.

$6\frac{7}{8} - 8\frac{3}{4} + 7\frac{3}{5}\frac{1}{5} - 4\frac{1}{10} = \frac{7}{8} - 2\frac{6}{8} + 3\frac{8}{5} - \frac{1}{10} = \frac{1}{8} + \frac{8}{5} - \frac{1}{10} =$

$\frac{5 + 64 - 4}{40} = \frac{65}{40} = \frac{13}{8} =$ $1\frac{5}{8}$. Ans.

3. Find by Practice 73 quarters 4 bushels 3 pecks of wheat at £1 6s. 8d. per quarter.

£ s. d.
1 6 8 = cost of 1 quarter
73

					qrs.	bls.	pks.
	£97	6	8	= „	73	0	0
4 bls. of 1 qr. = $\frac{1}{4}$	0	13	4	= „	0	4	0
2 pks. of 4 bls. = $\frac{1}{2}$	0	1	8	= „	0	0	2
1 pck. of 2 pks. = $\frac{1}{2}$	0	0	10	= „	0	0	1
Ans.	£98	2	6	= „	73	4	3

4. In working Practice what are the best aliquot parts (*a*) of a £ to take for 5s. 8d. and 11s. 3d.; (*b*) of a shilling for $5\frac{1}{2}$d.; (*c*) of a cwt. for 24 lbs.; (*d*) of an acre for 56 poles?

(*a*) 5s. 8d. = 4s. + 1s. 8d. = $\frac{1}{5}$ £ + $\frac{1}{12}$ £.

11s. 3d. = 10s. + 1s. 3d. = $\frac{1}{2}$ £ + $\frac{1}{16}$ £ or $\frac{1}{8}$ of 10s.

(*b*) $5\frac{1}{2}$d. = 4d. + $1\frac{1}{2}$d. = $\frac{1}{3}$s. + $\frac{1}{4}$s.

(*c*) 24 lbs. = 16 lbs. + 8 lbs. = $\frac{1}{4}$ cwt. + $\frac{1}{14}$ cwt. or $\frac{1}{3}$ of $\frac{1}{4}$ of cwt.

(*d*) 56 poles = 32 poles + 16 poles + 8 poles = $\frac{1}{5}$ acre + $\frac{1}{10}$ acre + $\frac{1}{20}$ acre *or* = $\frac{1}{5}$ acre + $\frac{1}{2}$ of $\frac{1}{5}$ acre + $\frac{1}{2}$ of $\frac{1}{8}$ of $\frac{1}{5}$ acre.

SECOND YEAR.

BOYS ONLY.

1. £32,850 invested in the Three per Cents. give an income of £1,080 a year. Find the price of the stock.

(*a*) Amount of stock to produce £3 per year = 100.

Amount of stock to produce £1,080 per year $= 100 \times \frac{1080}{3} = 36000$.

(*b*) Price of 36000 stock = £32850.

„ 100 „ $= £\frac{32850}{360} = £\frac{365}{4} =$ $91\frac{1}{4}$. Ans.

2. If the amount at $3\frac{1}{2}$ per cent. per annum, simple interest, after $50\frac{1}{2}$ years is £13,195, what is the principal?

Amount of £100 at $\frac{15}{4}$ per cent. for $\frac{152}{3}$ years $=$ £100 +

£100 $\times \frac{15}{4} \times \frac{152}{3} \times \frac{1}{100} =$ £100 + £190 = £290.

Now the question becomes, 'If £290 be produced from £100, what will £13,195 be produced from?'

Principal to produce £290 = £100
„ „ £29 = £10
„ „ £13195 = £10 $\times \frac{13195}{29} =$ £10 $\times$ 455

$=$ £4550 Ans.

3. If 7 per cent. be lost by selling goods for £145 6s. 3d., how much per cent. would be gained by selling them for £168 15s.?

The question becomes, 'If £145 6s. 3d. be 93 per cent. of the cost price, how much above 100 per cent. of cost price is £168 15s.?

As £145 6s. 3d. : £168 15s. :: 93 : x

16 : 16
2325 : 2700
93 : 108

$\frac{93 \times 108}{93} = 108$ per cent.

Ans. 8 per cent.

4. (*a*) Explain the terms proportion, stocks, brokerage, average, with examples.

(*b*) A coal dealer sells on 4 days 15·75 tons, 9·25 tons, 31·625 tons, $18\cdot\dot{3}$ tons. What is his daily sale?

(*a*) *Proportion* is the equality between two ratios, so that of four quantities the first is to the second as the third is to the fourth.

Thus as 12 : 9 :: 16 : 12.

Stocks are Government Funds (or money lent to a Government) of a fixed *nominal* amount, generally £100 per share, upon which interest is paid at a given rate. The Stocks are named from the rate of interest paid. The lender cannot demand his principal from the Government, but can transfer his claim to another. '*The Three per Cents. were at* $91\frac{1}{4}$,' means that £100 had been lent to our Government at 3 per cent., and that the lender was offering to sell his claim for £91 5s.

Brokerage is a commission paid to a dealer in shares as his remuneration. It is generally one-eighth per cent.

If I *buy* Three per Cents. at $91\frac{1}{4}$, I have to pay $91\frac{1}{4} + \frac{1}{8} =$ £$91\frac{3}{8}$ per share.

If I *sell* Three per Cents at $91\frac{1}{4}$, I have to receive $91\frac{1}{4} - \frac{1}{8} =$ £$91\frac{1}{8}$ per share.

Average is the consideration of the sum of unequal numbers as composed of the same number of equal numbers. Thus, if any 7 unequal numbers amounted to 42, *average* regards the 42 as composed of 7 numbers, each equal to 6.

(*b*) Amount sold on First day = 15·75 tons
„ „ „ Second day = 9·25
„ „ „ Third day = 31·625
„ „ „ Fourth day = $18\cdot3\dot{3}$

Total sold in 4 days = $74\cdot95\dot{8}\dot{3}$ tons

Average sold on 1 day $= \frac{74\cdot95\dot{8}\dot{3}}{4} =$ $18\cdot739583$ tons. Ans.

GIRLS ONLY.

1. Find the value of $\frac{3}{85}$ of a ton $-$ $\frac{4}{7}$ of a cwt. + $3\frac{7}{8}$ of 20 lbs.

$\frac{3}{85}$ of 1 ton = 84 lbs.
$\frac{31}{8}$ of 20 lbs. = $77\frac{1}{2}$ lbs. $\Big\} = 161\frac{1}{2}$ lbs.
$\frac{4}{7}$ of 1 cwt. = 64 lbs.

qrs. lbs. ozs.
Difference $97\frac{1}{2}$ lbs., or 3 13 8 Ans.

2. A party of men, women, and boys, 32 of each, earn £235 4s. Find what each man, woman, and boy earns, a man earning twice as much as a woman, and a woman twice as much as a boy.

32 men = 32 men
32 women = 16 men
32 boys = 8 men

Total = 56 men

Now the question becomes, 'If 56 men earn £235 4s., what will one earn?

Amount earned by 56 men = £235 4s.

„ „ 1 man $= \frac{235\text{ 4s.}}{56} =$ £4 4s.
∴ „ „ 1 woman = £2 2s.
∴ „ „ 1 boy = £1 1s.

} Ans.

3. 'Silver was in demand at 41⅝d., showing a rise of $\frac{1}{16}$d. per ounce.' What was the value of 1,000 ounces before the rise in the price?

Original price $= 41\frac{5}{8}$d. $- \frac{1}{16}$d. $= 41\frac{10}{16}$d. per oz. $= \frac{665}{16}$d. per oz.

∴ Original price of 1,000 ozs. $= \frac{665\text{d.}}{16} \times \frac{1000}{1} = \frac{665000\text{d.}}{16} =$

$41562\frac{1}{2}$d. $= 3463$s. $6\frac{1}{2}$d. $= £173$ 3s. $6\frac{1}{2}$d. Ans.

4. Show the simplest methods by which the following exercises may be worked by Mental Arithmetic :—

(*a*) 5 lbs. at $3\frac{1}{2}$d. per oz. = 5 lbs. at 56s. per lb. = £1 5s. Ans.

(*b*) $503 \times 21 = 1509 \times 7 =$ 10,563. Ans.

or $503 \times 21 = 500 \times 21 + 3 \times 21 = 10500 + 63 = 10{,}563$.

(*c*) 864 yards at $\frac{3}{4}$d. yer yard = 54 yards at 1s. per yard = £2 14s. Ans.

(*d*) 243 slates at $2\frac{1}{4}$d. each = 240 at $2\frac{1}{4}$d. + 3 at $2\frac{1}{4}$d. = £2 5s. + $6\frac{3}{4}$d. = £2 5s. $6\frac{3}{4}$d. Ans.

(*e*) 1s. 9d. × 19 = 1s. 9d. × 20 − 1s. 9d. = £1 15s. − 1s. 9d. = £1 13s. 3d. Ans.

(*f*) $\frac{15}{45} + \frac{14}{11} = \frac{1}{3} + \frac{3}{3} =$ 1. Ans.

(*g*) 1,440 eggs at 5 for 6d. = 288 eggs at 6d. each = 144s. = £7 4s. Ans.

(*h*) 100 books at 6s. 3d. for 60 = 5 books at 6s. 3d. for 3 = 5 × 2s. 1d. = 10s. 5d. Ans.

THIRD YEAR.

BOYS ONLY.

1. Find the square root of 1383·0961.

13 | 83· | 09 | 61 (37·19. Ans.

	9
67	483
	469
741	1409
	741
7429	66861
	66861
	....

2. A mixture is made of 297 gallons at 17s. 9d. per gallon, 132 gallons at 22s. 6d. per gallon, and 121 gallons at 19s. 4d. per gallon. Find the value of a gallon of the mixture :—

	£	s.	d.
Value of 297 gallons at 17s. 9d. =	263	11	9
„ „ 132 „ „ 22s. 6d. =	148	10	0
„ „ 121 „ „ 19s. 4d. =	116	19	4
„ „ 550 „ =	529	1	1
„ „ 50 „ =	48	1	11
„ „ 1 „ =		19	$2\frac{43}{50}$. Ans.

3. Divide 30 tons into three parts in the proportion of 3·2, 3·15, 3·25.

The sum of 3·2 + 3·15 + 3·25 = 9·6.

	tons	cwts.	qrs.	lbs.
The problem now is to find $\frac{3{\cdot}2}{9{\cdot}6}$ of 30 tons =	10	—	—	—
„ „ „ „ $\frac{3{\cdot}15}{9{\cdot}6}$ „ „ „ =	9	16	3	14
„ „ „ „ $\frac{3{\cdot}25}{9{\cdot}6}$ „ „ „ =	10	3	0	14

Ans.

4. (*a*) Prove that a fraction is divided by a whole number when its denominator is multiplied by that number.

(*b*) Divide $\frac{1{\cdot}5}{{\cdot}075}$ by $\frac{2\frac{1}{2}}{3{\cdot}25}$.

(*a*) The denominator of a fraction shows the value of each unit of the numerator. If therefore the denomination of these units be made only half, third, etc., of its previous value the value of the numerator is correspondingly reduced.

(*b*) $\frac{1{\cdot}5}{{\cdot}075} \div \frac{2\frac{1}{2}}{3{\cdot}25} = \frac{1500}{75} \div \left(\frac{13}{6} \times \frac{4}{13}\right) = \frac{1500}{75} \times \frac{6}{13} \times \frac{13}{4}$

$= \frac{20}{1} \times \frac{3}{1} \times \frac{1}{2} = 10 \times 3 = 30$. Ans.

GIRLS.

1. If 1323 oranges can be bought for £3 13s. 6d., what should be the cost of 1656 oranges?

	£	s.	d.
Cost of 1323 oranges =	3	13	6
„ „ 9 „ =	$\frac{3\ 13\ 6}{147}$		= 6d.
„ „ 1656 „ = 6d. × $\frac{1656}{9}$ = 6d. × 184 =			
£4 12s. Ans.			

2. Find the value of 27 tons 18 cwt. 4 lbs. of corn, when a bushel weighing $62\frac{1}{2}$ lbs. costs 3s. 9d.

27 tons 18 cwt. 4 lbs = 62500 lbs.
Cost of $62\frac{1}{2}$ lbs. = 3s. 9d.
∴ „ „ 125 lbs. = 7s. 6d.
∴ „ „ 62500 lbs. = 7s. 6d. × 500 = $\frac{£1500}{8}$
= £187 10s. Ans.

3. Divide the product of ·000015625 and 120 by the difference between ·5817 and ·4892.

$\frac{{\cdot}000015625 \times 120}{{\cdot}5817 - {\cdot}4892} = \frac{{\cdot}001875}{{\cdot}0925} = \frac{1875}{92500} = \frac{75}{3700} = \frac{3}{148}. =$
$= {\cdot}02027$. Ans.

4. A man left $\frac{7}{16}$ of his money to one of his sons, $\frac{4}{5}$ of the remainder to the other, and the latter had £106 13s. 4d., more than the former. What was the value of the remainder?

Remainder $= \frac{9}{16}$; and $\frac{4}{5}$ of remainder $= \frac{4}{5} \times \frac{9}{16} = \frac{9}{20}$.

Fractional Diff. of shares $= \frac{9}{20} - \frac{7}{16} = \frac{36 - 35}{80} = \frac{1}{80}$.

	£	s.	d.
Diff. value of shares =	106	13	4
∴ $\frac{1}{80}$ of the money =	106	13	4
∴ Remainder or $\frac{36}{80}$ =	106	13	4

× 36 = £320 × 12 =
£3,840. Ans.

Algebra.

1. The product of two algebraical expressions is $a^7 - 64a$, and one of the expressions is $a^2 - 2a + 4$. What is the other?

$$
\begin{array}{l|l}
a^2 - 2a + 4 & a^7 - 64a \,(a^5 + 2a^4 - 8a^2 - 16a \\
 & \underline{a^7 - 2a^6 + 4a^5} \\
 & 2a^6 - 4a^5 - 64a \\
 & \underline{2a^6 - 4a^5 + 8a^4} \\
 & -8a^4 - 64a \\
 & \underline{-8a^4 + 16a^3 - 32a^2} \\
 & -16a^3 + 32a^2 - 64a \\
 & \underline{-16a^3 + 32a^2 - 64a} \\
 & 0
\end{array}
$$

$a^5 + 2a^4 - 8a^2 - 16a$. Ans.

2. Find the G. C. M. of $102\,(a^4y + 9ay - 20y)$ and $119\,(5a^4x + 9a^2x - 64x)$.

$102\,(a^4y + 9ay - 20y) = 6 \times 17\,(a^2 + a - 4)\,(a^2 - a + 5)\,y$

$119\,(5a^4x + 9a^2x - 64x) = 7 \times 17\,(a^2 + a - 4)\,(5a^2 + 4a + 16)\,x$.

∴ G. C. M. = $17\,(a^2 + a - 4)$. Ans.

3. (*a*) Simplify $\frac{1}{p-3} + \frac{1}{p+3} - \frac{6}{p^2-9} = \frac{p+3+p-3-6}{p^2-9}$

$= \frac{2p-6}{p^2-9} = \frac{2\,(p-3)}{(p+3)\,(p-3)} = \frac{2}{p+3}$. Ans.

3. (δ) Show that

$$\left(q - \frac{a^2 - pq}{q - p}\right)\left(p + \frac{a^2 - pq}{q - p}\right) + \left(\frac{a^2 - pq}{q - p}\right)^2 = a^2$$

$$\left(\frac{q^2 - pq - a^2 + pq}{q - p}\right)\left(\frac{pq - p^2 + a^2 - pq}{q - p}\right) + \left(\frac{a^2 - pq}{q - p}\right)^2 = a^2$$

$$\frac{q^2 - a^2}{q - p} \times \frac{a^2 - p^2}{q - p} + \frac{a^4 - 2a^2pq + p^2q^2}{(q - p)^2} = a^2$$

$$\frac{a^2q^2 - a^4 - p^2q^2 + a^2p^2 + a^4 - 2a^2pq + p^2q^2}{(q - p)^2} = a^2$$

$$\frac{a^2q^2 - 2a^2pq + a^2p^2}{(q - p)^2} = a^2$$

$$\frac{a^2(q^2 - 2pq + p^2)}{(q - p)^2} = a^2$$

$$\frac{a^2(q - p)^2}{(q - p)^2} = a^2$$

$$a^2 = a^2. \qquad \text{Q. E. D.}$$

4. (α) What axioms are frequently used in the solution of equations?

(α) If equals be added to equals the wholes are equal.
(β) If equals be taken from equals the remainders are equal.
(γ) If equals be multiplied by equals the products are equal.
(δ) If equals be divided by equals the quotients are equal.
(ε) If equals be substituted for equals the results are equal.
(ζ) If equals be squared their squares are equal.
(η) The square, cube, etc., roots of equals are equal.

4. (δ) (α) Solve

$$\frac{3x - 1}{11} - \frac{2(x - 1)}{5} = \frac{2 - x}{10}$$

$$\frac{30x - 10 - 44x + 44}{110} = \frac{22 - 11x}{110}$$

$$30x - 10 - 44x + 44 = 22 - 11x$$

$$30x - 44x + 11x = 22 + 10 - 44$$

$$-3x = -12.$$

$x = 4$. Ans.

4. (δ) (β)

$$\frac{5(x - 2)}{x + 2} - \frac{2(x - 3)}{x + 3} = 3$$

$$5(x^2 + x - 6) - 2(x^2 - x - 6) = 3(x^2 + 5x + 6)$$

$$5x^2 + 5x - 30 - 2x^2 + 2x + 12 = 3x^2 + 15x + 18$$

$$5x^2 - 2x^2 - 3x^2 + 5x + 2x - 15x = 18 + 30 - 12$$

$$-8x = 36$$

$$x = -4\tfrac{1}{2}.$$

Mensuration.

1. Find the ratio of the areas of the triangles whose sides are 11, 90, 97, and 11, 25, 30.

Rule, Area $= \sqrt{s(s - a)(s - b)(s - c)}$

In First Triangle $s = \frac{11 + 90 + 97}{2} = 99$; $(s - a) = 88$; $(s - b) = 9$; $(s - c) = 2$.

∴ In First Triangle, Area $= \sqrt{99 \times 88 \times 9 \times 2} = \sqrt{9 \times 11 \times 11 \times 8 \times 9 \times 2} = \sqrt{9^2 \times 11^2 \times 4^2} = 9 \times 11 \times 4$.

In Second Triangle, $s = \frac{11 + 25 + 30}{2} = 33$; $(s - a) = 22$; $(s - b) = 8$; $(s - c) = 3$

∴ In Second Triangle, Area $= \sqrt{33 \times 22 \times 8 \times 3} = \sqrt{11 \times 3 \times 11 \times 2 \times 8 \times 3} = \sqrt{11^2 \times 4^2 \times 3^2} = 11 \times 4 \times 3$

∴ Ratio of First to Second Triangle $= \frac{9 \times 11 \times 4}{3 \times 11 \times 4} = \frac{9}{3} = 3$

As 3 : 1. Ans.

2. Find the rent of a square field whose diagonal is 7 chains 15 links at £4 10s. per acre.

Area of square on diagonal $= (715)^2$ square links $= 511225$ square links.

But area of square on side is (by Euclid I. 47) half of square on diagonal.

∴ Area of required square $= \frac{511225}{2}$ square links $= 255612{\cdot}5$ square links $= 2{\cdot}556125$ acres.

Cost of $2{\cdot}556125$ acres at £4·5 per acre $=$ £11·5025625 $=$ £11 10s. 0·615d. Ans.

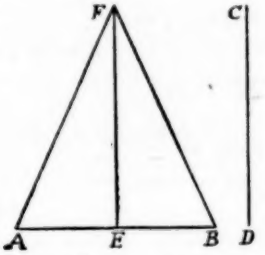
SECOND YEAR.

Euclid.

Question 1. Euclid I. 4.

Question 2. Euclid I. 23.

Question 3. Describe an isosceles triangle, having given the base and the length of the perpendicular drawn from the vertex to the base.



Let AB be the given base, and CD the given perpendicular.

Construction.—Bisect AB in E, and from E draw EF perp. to AB, and = to CD. Join FA and FB.

Then FAB is the required isosceles triangle.

Proof ∵ ∧s FEA and FEB are right angles they are equal (Axiom II.)

∵ AE = EB and EF is common, the two sides EF, EA = the two side EF, EB each to each and the ∧ FEA = ∧ FEB, ∴ base AF = base FB (I. 4) ∴ Δ FAB is isosceles and has the given base AB and given altitude CD.

Q.E.F.

THIRD YEAR.

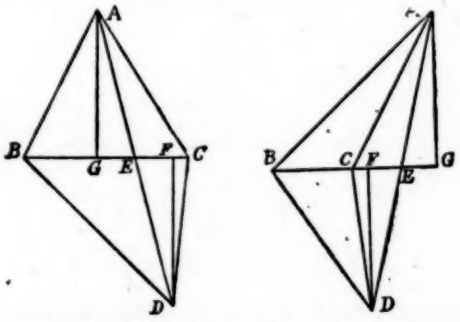
1. (α) Define parallel straight lines. See Def. 30.

1. (δ) Euclid I. 28.

2. (α) Define parallelogram. See Def. 31.

2. (δ) Euclid I. 44.

3. Two triangles of equal area stand on the same base, but on opposite sides of it. Show that the straight line joining their vertices is bisected by the base or base produced.



Let ABC and DBC be two equal triangles upon same base BC, but upon opposite sides. Join AD cutting BC or BC produced in E.

Construction.—Draw AG and DF perpendicular to BC or BC produced.

Proof.—For if the triangle DBC be revolved upon BC so that D be on the same side of BC as A, then the triangles would be between the *same* parallels (I. 39.)

∴ When on opposite side of base BC, they are between *equidistant* parallels. But the distance between parallel straight lines is measured by the common perpendicular between them.

∴ AG = DF; and ∧s DFE and AGE are = (Axiom II); and ∧s AEG and DEF are = (I. 15); ∴ side AE = side DE (I. 26), that is, the line AD joining the vertices is bisected by BC or BC produced. Q.E.D.

NOTES AND NOTIONS.

BY G. BEACH.

V.

'*One down, another come on*' is an excellent system in fighting, but '*one up, another come on*' is better still. This latter has been the case with the previous writers of these lucubrations. Messrs Yoxall and Macnamara are certainly not *down*, but *up* and promoted, *up* and doing—the former as Secretary to the N.U.T. and Parliamentary candidate for Bassetlaw, and the latter as editor of our contemporary, *The Schoolmaster*.

They well deserve any good fortune, will efficiently discharge whatever duties and will ornament any station that fall to their lot. *Fortes viri ambo, semper floreant.* I shall expect this good rule of promotion to be continued, and shall consider it grossly unjust if, after writing this article, I am not immediately appointed a Chief Inspector of Schools.

In a letter to *The Schoolmaster* a short time ago I advocated that a Unionist candidate also be run for Parliament, and further, that the editor of that paper should seek senatorial honours. Now that I know who the editor is, I am strengthened in my views. With three Teachers M.P.'s, if any injustice were perpetrated or perpetuated, *we would know the reason why.*

* * * * *

ONE of these said injustices is the boycotting of elementary school-teachers from the Inspectorate. In what other profession is all chance of promotion ostentatiously and insultingly withheld? I hope the Conference now being held at Leeds will speak with no uncertain sound upon this point, for the grievance is general, and affects more than teachers of the first rank. Have we not men who have been Presidents of our Union, who are scholars of academic standing, head-masters of unimpeachable ability and extended experience, educationists with ripened knowledge of, and personal acquaintance with, Continental schools, and have not these men been set aside for some raw '*Varsity*' man, because the latter is a gentleman—save the mark!—and the elementary teacher isn't, and never can be? How is it, then, that the largest School Boards choose their inspectors from the ranks? My Lords of Whitehall, despite your recent appointments, hastily made lest your patronage be taken from you by the next election, your system is doomed; and the time will come—and come soon—when the lowest monitor in the tiniest village school may aspire to the Chief Secretaryship. A word to Assistant Inspectors—but I beg your pardon gentlemen, you are only Inspectors' Assistants, only fit to mark papers, just about wide-minded enough to examine elementary subjects, but certainly too narrow of intellect to assess their educational value—to you, gentlemen, I say that a special slight has been offered, amounting almost to a breach of faith.

* * * * *

WAS it not understood throughout your ranks that no, or only a few, more '*Heads*' would be appointed, but that as officials were wanted, Assistants would be created '*Subs*'? Many of you have resigned lucrative schools, commenced duty with the paltry £150 per annum, and where are your dreams of status now? You have been cruelly treated.

But may I give you one word of advice? The educational profession from Whitehall to Slocum-podger, from Chief Secretary to Pupil Teacher, should be homogenous. There should be no social or professional gaps between the elevations. Now gentlemen, why have you held aloof from Teachers' Associations? You are neither influential nor numerous enough to obtain redress by your own unaided efforts. Remember, therefore, the rock from which ye were hewn, and the pit wherefrom ye were digged.

Yet after all, this injury is no worse than in the case of pensions promised to and withheld from old teachers. I know and highly esteem an old teacher who has conducted the same school for forty years, and who would have retired long since had public faith been kept.

Whilst I am engaged in inculcating submission and contentment in that state of life, etc., it will be well to put the following questions, suggested by correspondents, concerning the Code:—

(*a*) Is it right for the Department, after allowing in the Code two half-time attendances, to count as three, to frame '*Instructions to Inspectors*,' which restrict this concession? For instance, if a scholar attends school *full* time for the first six months, and then *half* time for the last six months of the school year, no additional attendances at all are allowed.

(*b*) Is it right, instead of raising the Drawing Grant, to lower the Specific Grant from 4s. to 3s. per head? How noble an encouragement is this to Higher Grade and Cookery Schools!

(*c*) Is it right to retain Article 101 (*e*) iv. of the Code? In small schools much hardship is thereby caused. Why not let Drawing be taken by the boys, whilst the Girls take Needlework?

* * * * *

THERE are 'breakers ahead' which menace our unity, and which crave wary steering. There are the questions of Voluntaryism *v.* Boardism; Rural *v.* Town Teachers; Assistants *v.* Heads; Metropolis *v.* Provinces *re* the Electoral Districts Question. All these will require careful handling, and can only be outridden by the scotching of jealousy, and the nurture of an altruistic professional spirit.

> Jealousy with ranking tooth,
> That only gnaws the secret heart,

is perhaps our greatest foe. Let but a teacher overtop his neighbour in the slightest degree, and in some comrade's breast the serpent's fang is fixed.

* * * * *

THE great curse of voluntaryism and small school boards is the same, 'one-man management.' This opens the door to tyranny and peculation. I know cases where (*a*) A manager's wife is paid £40 per year as Sewing Mistress in a small school; (*b*) A manager's pony is kept in a field whose rent is paid for by the school, and the use of which (field and pony) is not allowed to the school; (*c*) A manager who charges the full published prices for books, and pockets 25 per cent. of it.

* * * * *

A FRIEND of mine was last year visiting his *cousin*, who is a teacher under a rural school board. This board has upon it the village cobbler, tailor, publican,

etc., and has only a single school under its jurisdiction. These facts being so, of course the board is very self-important. To be brief, it was persecuting the teacher, and the visiting *cousin* naturally sought to prevent this. He accordingly sent for a gallon of beer from the publican member and 'treated' the school board. The remedy was cheap and effectual.

* * * * *

A THEORY has been suggested to me accounting for the mediocrity of the individuals who compose the average school board and board of guardians. It is this: There is no *title* attached to the office. Were members *Councillor* Jones or *Alderman* Smith a higher class would apply. The man who invents a suitable appellation will be a public benefactor, and ought to have a school board erected to his memory.

* * * * *

Now for lighter themes:—In Prestbury Schools, near Macclesfield, about a month ago, an associative scholar described the 'Translation of Elijah.' He wrote, 'Now Elijah and Elisha were talking together, and there came a chariot and horses of fire and snatched up Elijah. And as he was ascending there came forty and two she-boys out of a wood and shouted after the prophet, "Go up, thou bald-head, go!"'

I once asked a scholar of mine to explain this sentence: 'Sailors have to undergo great hardships.' He replied, 'They have to dive under ironclads.'

Another young hopeful very neatly paraphrased 'The clouds drops *fatness*,' by 'There was a *dripping* shower.'

* * * * *

AN examiner sends the following definition: 'The Tropic of Cancer is where the sun catches a crab and falls back on its axis towards the southern hemisphere. It is one of the sun spots.'

The next scene is laid in the Midland Counties. Inspector is examining individually in Geography of England, and has a small blank map of England before him. *Dramatis Personæ*: Inspector, First Boy, Second Boy.

SCENE I.—*H.M.I.* and *First Boy*.

Inspector.—What county is here?

First Boy.—Kent, Sir.

Inspector.—What river is this flowing northwards into this estuary.

First Boy.—The Medway, Sir.

Inspector.—Isn't it the Thames, Boy?

First Boy (hesitatingly).—Yes, Sir.

Inspector.—Go to your place. You know nothing about it. (Exit boy sorrowfully, for he knew much geography.)

SCENE II.—*H.M.I.* and *Second Boy*.

Inspector.—Show me the mouth of the Mersey.

Second Boy (pointing thereto).—Here it is, mon.

Inspector.—Don't be rude. What is this town?

Second Boy.—Birkenhead.

Inspector.—Isn't it Liverpool?

Second Boy (indicating with his thumb over his shoulder).—Look here, mon, yo ain't a gooing to a' me like yo did 'tother chap oer theer.

* * * * *

MONSIEUR JEAN-MARIE GUYAU, in his '*Education and Heredity*,' quotes the startling statistics from Havelock Ellis' '*Criminal*':—'The Jukes family, starting from a drunkard, produced, in 75 years, 200 thieves and assassins, 90 impure women, and 248 invalids.' How long will the morally insane be allowed at large, and what chance has a teacher against such depraved heredity?

* * * * *

RIGHT 'Notions' for the month:—

To the New President.—'Thou art no common man, we wish thee Commoner.'

To the New Law Secretary.—Look after security of tenure. Work the stops well, and allow nobody to peddle with teachers.

To the New Executive.—Chew the Code well.

* * * * *

1892 CONFERENCE AT LEEDS.

SINCE writing the above I have attended the Conference at Leeds, which has been in no way inferior to any of its predecessors.

A great debt of gratitude is due to Mrs. Holmes, Lewis and Miss Forrest, Messrs. Gardiner, Child, West, Blenkinsop, Peaker, Albinson, Wigglesworth, Hammond, and Norminton for the very complete and comfortable arrangements for the convenience of delegates. I myself owe many thanks for the kindly hospitality displayed.

The public reception on Monday the 18th was worthy of the great town of Leeds. The Mayor, Professor Boddington of Yorkshire College, Mr. Legard (H. M. I. for the district), Mr. Wilkinson (Chairman of School Board), Dr. Talbot (Vicar of Leeds), Rev. J. H. Matthew, Principal of Leeds Grammar School, all extended a most kindly welcome. To my mind the remarks of the last named were to us the most interesting and fraternal.

As preliminary Chairman, Mr. R. Sykes, the Deputy-President, excelled himself in the reception of the different deputations, and his dignified bearing, and the chaste eloquence of his well-selected words, could not fail greatly to impress the gentlemen addressed with a great idea of the force and intellect of our Union.

Of Mr. Yoxall's address only one opinion can be held. It was epigrammatical, instructive, convincing, and pugnacious. Very favourably indeed, on the whole, has it been reviewed by the Press, but it is noteworthy that certain journals of a particular tinge have strongly condemned the President's vigorous attacks upon the system of appointing the Inspectors according to caste, and of boycotting elementary teachers from that office.

It is very pleasing to note that much greater interest than usual was taken in the Reports of the various Benevolent Institutions, and Mrs. Burgwin again fascinated her audience with a spirited and pathetic address.

During the week many most interesting and fraternal reunions were held. One very noteworthy one was that of old students of Culham, Carmarthen, and Bangor, held at the West Riding Hotel, and at which deputations from our York, Durham, Battersea, Borough Road, Winchester, Chester, Exeter, and Saltley brethren attended. Other very interesting events were the friendly gatherings of the metropolitan colleges. In every case they were well attended and highly successful.

On Tuesday morning the prominent feature was the long expected duel between Messrs. Waddington and Sykes of Half-time Council renown. The views of the

former prevailed by a large majority, and when a poll was demanded the endorsement was more emphatic still.

In the afternoon a most important advance was made in the forward policy.

It was resolved that 'After the 31st December, 1892, 2s. 6d., and after 31st. December, 1893, 5s. entrance fee be charged in the cases of those teachers who do not join the Union within twelve months after being placed upon the staff of an elementary school.'

The next step, as read by the light of history, does not appear so sage.

Power was given to the Executive to expel any member whose character or conduct makes it desirable that that member's name should not be retained on the roll of members.

This resolution is certainly most elastically worded, and gives power to the Executive to expel any member who makes himself unpleasant. Our own Parliament has not always exercised the power of expulsion or disfranchisement in a wise manner.

Upon the question of electoral districts, the formation of which the Leicester Association championed, a battle royal was fought, Messrs. Wild, Hicks, Gray, and Sykes being against, and Messrs. Boughton, Bowden, John, Horton being for.

A show of hands resulted in the victory of Leicester; but a poll was demanded, with the result that emphasised the previous decision, viz.—

For Electoral Districts	... ...	6,735
Against " "	... ...	4,508
	Majority	2,227

It is much to be regretted that signs of cleavage betwixt London and the Provinces were most plainly to be discerned.

The Conference Dinner on Tuesday evening at the Queen's Hotel was very largely attended, many delegates not being able to be accommodated.

The Vicar of Leeds, Dr. Talbot, utterly spoiled an otherwise admirable speech by a defence of Caste in the Inspectorate, and by a denial of the right of the elementary teacher to promotion.

It was certainly bad taste to introduce controversial subjects and to offer a gratuitous insult to his hosts of the evening.

Mr. F. S. Powell, M.P., in the course of an excellent oration, declared in favour of pensions to teachers; but the SPEECH OF THE EVENING was that of Mr. G. W. KEKEWICH.

The Executive and Conference Committee are to be congratulated upon securing his presence and pronunciamentos. With excellent good taste, in answer to the toast of the Education Department, he mourned the Union's loss of Messrs. Collins, Russell, and Grove, and paid a personal tribute of respect both to our departed brethren and Mr. Heller. He promised to extend the same co-operation to our new Secretary, Mr. Yoxall, as long as he followed the same statesmanlike and prudential course of conduct as his predecessor.

Mr. Kekewich claimed that the Department had extended the application of the principle of classification to specific subjects, and was happy to say that in not half-a-dozen cases had the newly-acquired freedom been abused. The resolve to trust the teacher had been taken against the advice of a high educational authority, and the Department was delighted to find that teachers were equal to the occasion; indeed, the only fault to be found was that teachers had been too timid in realising how complete was their emancipation.

With regard to Drawing, no hardship whatever would be inflicted, but the greatest consideration would be shown, and to remove any vestige of misapprehension the word '*readily*' would be inserted in the Drawing article. Only in cases where the introduction of Drawing was obstinately opposed would the grant be withheld. Drawing would only be forced where full means of instruction existed; but not otherwise.

Some managers of country schools had asked why Drawing should be forced upon their scholars, who were only going to be agricultural labourers. 'What right,' said Mr. Kekewich, 'had these men to assume that the children would invariably be agricultural labourers?' But even if this were the case, he had the testimony of a practical farmer that a knowledge of Drawing would even assist elementary agricultural operations.

Passing on to the *Pension Scheme*, he did not agree with pensions of unequal amount nor with the forfeiture of pensions where teachers broke down before a certain age.

The question of *Extraneous Duties* was a very thorny one, and any regulations which could at present be laid down by the Department would be easily evaded; but the following words would be at once added to the balance-sheet in 'Form IX.':—

'The salary entered must be the amount paid for duties performed as a teacher, and must not include any sum paid to a teacher in any other capacity.'

Whenever a manager complained to him that he couldn't get a teacher, he always asked the following two questions:—(1) What duties are required, and (2) What salary is paid?

Mr. Kekewich did not dread a 'Famine of Teachers' and although there was a dearth of assistant teachers at present, there would be no lowering of the qualifications, and several suggestions to this effect had been rejected.

He knew that this temporary scarcity would raise salaries, and he rejoiced thereat; indeed, he wanted to see '*starvation salaries*' abolished.

As regards another point, he had a great horror of extra hours—of sweating—and a great admiration of steady work, consistently pursued throughout the year. He wished the N.U.T. all success, and every teacher all prosperity.

Principal Barnett, in a witty speech, proposed the toast of the N.U.T., and coupled with it the name of Mr. Yoxall, the President, and a Parliamentary candidate for Bassetlaw.

He said that Mr. Yoxall only partially fulfilled the definition that 'A Parliamentary candidate was a gentleman who *stood* in the hope of *sitting* and with the certainty of *lying*.'

In response, Mr. Yoxall denied that University culture was the one essential qualification for the Inspectorate—that it was always secured by University graduates—and that even were this so, there were many teachers in the profession who possessed this culture, and many other qualifications in addition, which were absent in the ordinary graduate.

THE 1892 CERTIFICATE EXAMINATION.

BY DR. GEORGE BEACH, M.A.,

Co-Author of 'A Manual of our Mother Tongue,' 'A Girls' Arithmetic,' Author of 'Elements of English,' 'Entertaining Readers,' etc.

1. REMARKS ON ROUTINES:—

FIRST YEAR.

(*a*) Parse *round, sigh, prayed, fair, nor, saint, but full, seemed, like, thunder-cloud, stern, lent, backward, horse's, scattering,* OR, *I, loving, No, sport, being, myself, guide, too, oft, timely, mandate, to stray, but, thee, serve, may, through, compunction, wrought, supplicate.* (First Friday.)

(*b*) Parse *So, near, time, E'en, blessed, Far, more, sitting, lone, times, all, between, Thought, green, free, For,* OR, *These, have, been, As, landscape, oft, have owed, sensations, felt, passing, even, feelings, such, perhaps, As, that, His, acts.* (Third Monday.)

(*c*) Analyse '*Suspicions amongst thoughts.....irresolution and melancholy,*' of Bacon's XXXI. Essay. Also Parse *like, bats, ever, certainly, to be repressed, least, whereby, go, on, currently, husbands, melancholy,* OR, *but, forgetting, that, Star, Hath had, setting, Not, trailing, home, to close, But whence, Youth, farther, travel, still.* (Fourth Monday.)

SECOND YEAR.

(*a*) Parse *true, there, power, already, Wise, have, their, Now, If, dare, build, so, Some, that, thank, making, to plain, offer, This.* (First Wednesday.)

(*b*) Paraphrase lines 30 to 49 of Scene 2, Act IV., *King Lear.* (Third Saturday.)

(*c*) Parse *How, fortune, that, must, just, This, of, party, heavens, that, were, not, detector, If, he, mighty, false, Earl of Gloucester, out, where, ready, our.* (Fourth Monday.)

2. BACON'S ANTITHETA.

Essay I. FOR	AGAINST.
1. No pleasures are in accordance with nature save those that never breed satiety.	1. Contemplation is a specious sloth.
2. No prospect is so fair as the sight of wanderers far below.	2. Good thoughts are little better than good dreams.
3. How blessed it is to have the orb of the mind concentric with the orb of the Universe!	3. God cares for the world, you should care for your country.
4. All perverted passions are but so many false notions. Goodness and knowledge are identical.	4. The statesman also finds time to sow the seed of contemplation.
Essay II. FOR	**AGAINST**
1. It is absurd to prefer the appendages of life to life itself.	1. While philosophers make so much preparation to front death, they make it more fearful.
2. Whatever be our goal, yea, though it be virtue, a long course is better than a short one.	2. Men fear death because they know it not; as boys fear the dark.
3. Without a fair length of life, one finds no time neither to do, nor to learn, nor to repent.	3. No human passion is so weak but, if roused a little, it can overcome the dread of death.
	4. A man would die even from mere weariness of doing the same thing over and over again, though he were neither valiant, nor miserable, nor prudent.
Essay IV. FOR	**AGAINST**
1. Private revenge is a kind of wild justice.	1. The man that commits a wrong commences the mischief; the man that retaliates perpetuates it for ever.
2. He who repays violence with violence offends against the law only, not against the individual.	2. The more natural vengeance is, the more it must be repressed.
3. As the laws are too often inoperative, the dread of private revenge is a useful deterrent.	3. The man apt to retaliate may rightly be suspected of initiating wrong-doings.

(To be continued.)

1. These Antitheta, which are simply paradoxes showing both sides of the question, have not only been asked for at the Christmas Examination, but will be of great service both in studying the Essays and in composing synopses or them.

2. There exists a wish, easy to be understood but not satisfied with equal facility, to know the marks awarded for, and the relative importance of each subject, and also what are the failing subjects. However, since 1883 no formal information has been vouchsafed, but from interval evidence, and a comparison of the current opinions of specialists, we have no hesitation in saying that Reading, Repetition, Penmanship, Arithmetic, Composition, Spelling, Parsing, School Management and Needlework are the FAILING SUBJECTS. There are, however, considerably more failures from general than specific weakness. As regards marks for each subject, these are more on a level than formerly, but a *general* idea may still be obtained from the following table, the last published by the Education Department:—

	Marks.		Marks.
Reading	100	Geography	63
Penmanship	75	History	63
School Management	75	Political Economy	63
Teaching	125	Music	90
Composition	50	Drawing	63
Grammar	63	Languages	125
Mathematics	225	Sewing and Cutting-out	100
Domestic Economy	63		

It must be remembered that the Composition and Penmanship are adjudicated upon from the quality of all the papers.

3. *Are Acting-Teachers dealt with more leniently than Students-in-Training?*

There is very little difference, that is, judging from the most recent utterances.

		By Acting-Teachers.	By Students-in-Training.
Percentage of Marks requisite to obtain a Certificate of Division.	I.	63	64
	II.	49	52
	III.	33	36

Practically speaking, therefore, the standard requisite to be obtained to secure the lowest pass is a little above what is required to avoid failure at the ordinary Degree Examinations.

4. REMARKS ON READING.

This is a subject that is far too frequently neglected by every class of teacher; and especially is this the case with Acting-Teachers. These latter have frequently no tuition at all or merely by correspondence, and at present it is far too costly to practise reading by declaiming into a telephone. Left, therefore, to themselves, private students forget that they can materially assist themselves. Demosthenes practised oratory in the solitude of a seaside cavern, where the roaring of the surf forced him to exaggerate emphasis in order to produce effect. Others less distinguished have profited by addressing audiences of cabbages or chairs.

Practice is absolutely necessary to secure the higher qualities of Reading, such as expression, modulation of the voice, and correct delivery of long and involved sentences. Yet, without these are attained only moderate marks will be awarded.

What are the conditions required before a person can become a thoroughly good reader?

He must first be fluent and perfectly accurate in pronunciation. Practice, recourse to the dictionary, and conversation with educated persons will do much in this direction. It is, of course, impossible for us to wade through the various vulgarisms and provincialisms prevalent from Dan to Beersheba (which being interpreted means from Berwick to Land's End) and to provide remedies therefore, but our pupils will be credited with the ordinary quantity of education and perspicacity.

But there yet remain many and varied gifts, some intellectual, some corporeal, which facilitate the attainment of this art—such as a lively perception, a vivid imagination, an easily aroused sympathy, a sound judgment, a good ear, and a flexible voice.

Too many impede their progress by reading only one style of composition. Let the seeker after excellence range from grave to gay, from lively to severe. Read ALOUD, therefore, humourous, brilliant, ironical, pathetic, tragic, theological and political compositions; endeavour to enter into the author's ideas and reproduce them with suitable action if necessary.

Speeches, plays, sermons, lectures compiled for the purpose of actual delivery or performance, obviously afford greater facilities for improvement in reading, than those books intended for the quietude of the study and the meditation of the closet. If you have a

CERTIFICATE ROUTINE FOR MAY, 1892 (MEN AND WOMEN, FIRST YEAR).

DAYS	FIRST WEEK.			SECOND WEEK.			THIRD WEEK.			FOURTH WEEK.		
	I.	II.	III.	I.	II.	III.	I.	II.	III.	I.	II.	III.
MONDAY	Notes of a Spelling Lesson to Standard III.	Read 'Lay of Last Minstrel,' Canto III., *or* 'Ode to Duty.'	Euclid, Book III., Props. 8 to 15, *or* Repairing Underclothing	Rewards and Punishments	Study the Notes to 'Lay of Last Minstrel,' *or* 'Ode to Duty.'	Euclid, Book III., Props. 16 to 24, *or* Paper Pattern of a Pair of Drawers	Sequence of Intellectual Development	Analyse Lines 304 to 320 of Canto III. of 'Lay of Last Minstrel,' *or* Lines 23 to 35 of 'Tintern Abbey' Parse difficult words	Euclid, Book III., Props. 25 to 31, *or* Any Needlework	The Range of the Teacher's Influence	Analyse and Parse from Essay XXXI. *or* Lines 58 to 72 of 'Ode on Immortality.'	Euclid, Book I., Props. 14 to 26, *or* Answering Needlework Questions
TUESDAY	Chief Dates from 1603 to 1660	Problems involving Quadratics, *or* Composition of Food	British Possessions of Asia except India, *or* Northern States of Africa	Chief Dates from 1660 to 1688	Ratio and Proportion of Algebra, *or* Cleansing of Clothing.	Latitude and Longitude, with Problems thereon	Tables of the Battles of the 'Wars of the Roses' and 'The Great Rebellion'	Evolution and Variation of Algebra, *or* Warming and Lighting of the Home	British Possessions of Asia except India, *or* Transvaal and the Orange Free States	Chief Dates from 1688 to 1714	Problems on Simple Equations, *or* Processes of Respiration, etc.	Distribution of Animals
WEDNESDAY	Theory of the Simple Rules of Arithmetic	History from 1603 to 1660	Mensuration of the Square, *or* Mental Arithmetic	Percentages	Any Revision, *or* pp. 120 to 150 'Burke's Reflections'	Mensuration of Rectangles, *or* Compound Proportion	Theory of Practice and Proportion	Any Revision, *or* pp. 150 to 180 of 'Burke's Reflections'	Discount	Work Examination Questions in Arithmetic	Work Examination Questions in Arithmetic	Political Geography of British North America, *or* Geography of Western Africa
THURSDAY	History from 1642 to 1649, *or* Growth of our Navy	Problems involving Quadratics, *or* Nutritive Value of Food	Map of England South of the Thames, *or* of British East Africa	History from 1660 to 1688	Involution and Evolution of Algebra, *or* Clothing Outfits	Effects of Climate on National Character	Constitutional Affairs from 1066 to 1215	Simultaneous Simple Equations, *or* Cleaning Rooms and Furniture	Map of Hindostan, *or* Map of British West Africa	History from 1688 to 1714	G.C.M. and L.C.M. of Algebra *or* Ventilation	Bacon's Essays, XV., XVI., XVII. *or* Any School Management
FRIDAY	How to Teach Arithmetic	Deductions on Euclid, Book I., *or* Diagram of a Pair of Drawers for a Child of Five	Analyse lines 42 to 56 of Canto III., 'Lay of Last Minstrel,' *or* Lines 25 to 35 of 'Ode to Duty.' Parse difficult words	Profit and Loss	Write out a Summary of Essay XXV., *or* 'Intimations of Immortality'	How to Train the Hand	Notes of a Lesson in Freehand Drawing to Standard IV.	Deductions on Euclid, Book II., *or* Cutting out of a Woman's Chemise	Read Bacon's Essays, I., II., IV., *or* 'Burke's Reflections' pp. 180 to 210	Mensuration of Parallelograms, *or* Present Worth	How to Teach Grammar, *or* 'Form'	Read Bacon's Essays, V., IX., XI., *or* 'Burke's Reflections,' pp. 210 to 240.

SATURDAY																
	Music, Signatures of the Simple Times, *or* 2, 3, and 4 pulse measures	Science	Drawing	English Composition	Music, All the Major Scales, *or* Mental effects of Notes	Science	Drawing	Repetition, Literature, and Penmanship	Music, Contents of Measures	Euclid, Book I., Props. 1 to 13, *or* Historical Dates	Bacon's Essays, IX., XI., XIV., *or* Grammar from Text Book	Paraphrasing (see Article)	Musical Terms in Common Use	Historical Dates	Grammar from Text Book	Repetition, Literature, and Penmanship

CERTIFICATE ROUTINE FOR MAY, 1892 (MEN AND WOMEN, SECOND YEAR).

DAYS	FIRST WEEK.			SECOND WEEK.			THIRD WEEK.			FOURTH WEEK.		
	I.	II.	III.	I.	II.	III.	I.	II.	III.	I.	II.	III.
MONDAY	Jevons' Logic, pp. 22 to 37.	Read 'King Lear,' Act II., Scenes 3 and 4, and Act III., Scenes 1, 2, and 3	Revise Euclid, Book III. *or* Tucking and Marking with Cross Stitch	The influence of Cleanliness and Method upon Health of Teachers and Schools	Deductions on Euclid, Book III. *or* Diagram of a Woman's Nightdress	Read Cantos V. and VI. of 'Last Minstrel,' *or* Trench, Lecture IV.	Pages 41 to 62 of Spencer *or* Sections 168 to 178 of Locke	Deductions on Euclid, Book II. *or* Hedge-tear and Cross-cut Darns	Paraphrase Lines 23 to 36 of 'King Lear,' Act III., Scene 4	The Half-time Register and 'Form IX.'	Deductions on Euclid, Book I. *or* Write down Directions for Making a Woman's Nightdress.	Analyse lines 9 to 19 'King Lear,' Act III., Scene 5. Parse difficult words
TUESDAY	Chief Dates from 1527 to 1588 *or* History from 1789 to 1802	Continued Fractions *or* Stocks	As in First Year — General Political Geography of Mexico	History from 1603 to 1642 *or* From 1808 to 1815	Discount and Present Worth	As in First Year — Geography of Labrador, Prince Edward, Cape Breton's, Anticosti Isles, etc.	Rewards and Punishments; Emulation and Example	Stocks	As in First Year — Physical Geography of Canada	History from 1642 to 1660 *or* Lives of Warriors from 1789 to 1820	Proofs of Fractional Operations	As in First Year — Physical Geography of Canada
WEDNESDAY	Analyse Lines 30 to 41 of 'King Lear, Act III., Scene 2	Binomial Theorem *or* Bread and Paste Making	How to Inculcate Kindness and Civility	Read 'Bacon's Essays' 21, 24, 25 *or* Notes on 'King Lear'	Notes of a Lesson on Simple Analysis to Standard V. *or* On the Square (for Infants)	Binomial Theorem *or* Puddings for the Sick	Mensuration *or* Any Revision	Logarithms *or* How to Detect Food Adulteration	Chief Dates from 1588 to 1640 *or* History of Inventions from 1789 to 1820	Jevons' Logic pp. 37 to 53	Algebraic Ratio and Proportion *or* Utilisation of Scraps of Food	Any Geography
THURSDAY	History from 1688 to 1714 *or* History from 1802 to 1808	Problems on the Work of Mixed Agents	As in First Year — Map of Nova Scotia and New Brunswick	History from 1714 to 1760 *or* From 1815 to 1820	Equation of Payments	As in First Year — Geography of Central America	History from 1760 to 1790 *or* Lives of Statesmen from 1789 to 1820	Averages	As in First Year — Map of Manitoba	History from 1790 to 1815 *or* Religion and Philanthropy from 1789 to 1820	Surds *or* Compound Proportion	As in First Year — Geography of Southern United States
FRIDAY	Binomial Theorem *or* Diet for Convalescents.	Euclid, Book VI., first 5 Props. *or* Diagram of a Woman's Nightdress	Ventilation and Water-supply of School Premises	Roots of Quadratics *or* Proper Seasons for the various meats	Euclid, Book VI., first 11 Props. *or* Cutting-out of a Child's Muslin Pinafore	Mensuration *or* Any Revision	Logarithms *or* Ordinary Leverages	Euclid, Book VI. first 17 Props. *or* Making of a Child's Muslin Pinafore	Read 'Bacon's Essays,' 27, 28, 29 *or* Trench, Lecture V.	Algebraic Surds *or* Symptoms of the Ordinary Diseases	Euclid's Def. Axioms, etc., of first 6 Books *or* Making of a Child's Muslin Pinafore	Paraphrasing, Composition, or Grammar from Text-Book.
SATURDAY	Music	Science	Drawing	English Composition upon the character of Gloucester	Music	Science	Drawing	Repetition Literature and Penmanship	Music	Answering Questions *or* Studying Model Answers	Paraphrasing (see Article)	Music	Answering Questions *or* Studying Model Answers	Repetition Literature and Penmanship

chance of hearing any celebrated preacher, lecturer, orator, or player by all means utilise the opportunity, and note how he manages his voice, and how he renders passages of varied style.

SELECTED GOVERNMENT QUESTIONS.

FIRST YEAR.

SECOND WEEK.

1. Write a large hand copy of '*Stylographic Characteristics.*' Write a small hand copy of '*One swallow does not make a Summer.*'

2. Write from Dictation :—

'In education the first place must be awarded to the common interests of the individual and the species, to what can develop simultaneously both the intensity and expansion of life. We must not consider the individual solely in himself, as a point in space, in abstraction from the moral and intellectual atmosphere in which he is completely immersed, and which is, perhaps, equally with the terrestrial atmosphere, the very condition of his being. If the first necessity is to live, surely the second is to obtain the means of so doing; to acquire the utmost capability of adaptation to the circumstances of one's environment.'

3. Name the Registers required to be kept in a public elementary school. By whom should the Admission Register be kept? What particulars must it contain? State why each of these particulars is required. Why should there be no erasures in an Attendance Register? How should an error be corrected? What rules should be observed with regard to the calculation of the average attendance? When is a register to be considered finally closed?

4. Define the terms *education* and *instruction*. Explain the statement that '*Nature itself points out the safe course, and the faculties which first require development are those in which there is the least fear of overstraining.*'

5. Write the following passage, one octave higher in the treble clef :—

OR

What are the three chief chords of the Major Scale? Write them in the order they are taught on the Tonic Sol-fa method.

6. Write in the treble clef the signatures of the major keys of E, D, B♭, A, A♭, OR briefly describe the mental effects of the tones of the scale.

7. '*To show the full conjugation of the English Verb we must employ auxiliaries.*' Give examples of the different auxiliary verbs, and their special uses for the above purpose.

8. *(Men only.)* Paraphrase the following and parse the italicised words :—

'He crossed the threshold, and a clang
Of angry steel *that instant* rang.
To his bold brow his spirit rushed,
But soon for vain alarm, he blushed,
When on the floor he saw *displayed*
Cause of the din, a naked *blade*,
Dropped from the sheath, that *careless flung*,
Upon a stag's huge antlers *swung*;
For all around, the walls to grace,
Hung trophies of the fight or chase.'

(Women only.) Write out an abstract of that portion of Wordsworth which you have committed to memory for Recitation.

9. In which of the five zones are Ceylon, Sicily, New Zealand, Cape Colony, and Hindustan situated? Mention some of the flora peculiar to the *torrid* zone.

10. Draw map of Northern India, OR of the Zambesi.

11. *(Men only.)* From which of our Colonial possessions do we obtain *rice, coffee, sugar, jute, indigo, furs* and *ivory*?

(Women only.) Give a concise account of the most marked physical features of Africa, its climate, extent, and population.

12. Of whom was the Witanagemot composed? What was its powers? Give the derivation of the word '*king.*'

13. Prepare the outline of a lesson for an advanced class, upon the state of the Highlands in the 17th century.

14. *(Men only.)* Relate the causes of the war with Holland, under the Protectorate of Cromwell, the chief events of the war, and the terms of peace.

15. (*a*) Prove that $\frac{3}{4}$ of $\frac{4}{5}$ of a unit equals $\frac{9}{10}$ of that unit; (*b*) Explain, as to a class of children, who can work easy direct sums in Simple Interest, the working of this sum :—In what time will the Simple Interest on £650 amount to £130 at 5 per cent.?

Ans. 4 years.

16. *A* invests £4,625 in railway stock at 125, *B* invests £4,920 in another at 120; *A* receives an annual dividend at the rate of 4½ per cent., and receives £3 10s. more than *B*. At what rate was *B's* dividend calculated?

Ans. 3¾ per cent.

17. *(Men only.)* What is the area of a field, whose south side is 2,740 links, east side 3,575 links, north side 3,755 links, west side 4,105 links, and the diagonal, from south-west to north-east, 4,835 links?

Ans. 123 acres 11·8633 poles.

(*Women only.*) Draw a diagram of the upper half of a woman's chemise ($\frac{1}{8}$ inch scale). State the kind and quantity of material required in making up the full-sized garment, also what stitches should be used.

18. (*Men only.*) Required the length of a cord fastened at one end to a stake, and the other end to a cow's horns, so that she may feed on an acre.

Ans. 39¼ yards.

(*Women only.*) £150 of a man's income was exempt from Income Tax. After deducting the tax at 5d. in the £ on his remaining income, he had £884 7s. 6d. left. What was his income?

Ans. £900.

19. (*Men only.*) If a straight line be divided into any two parts so that the rectangle contained by the whole line and one part is equal to six times the square of the other part, find the ratio of the parts.

Ans. As 2 : 1.

(*Women only.*) What is meant by '*jerry-building*'? Name the defects and dangers of such a mode of constructing houses.

20. (*Men only.*) An express train running from London to Wakefield (a distance of 180 miles) travels half as fast again as an ordinary train, and performs the distance in two hours less time. Find the rates of travelling.

Ans. 45 and 30 miles per hour.

(*Women only.*) Name the most effective ways of ventilating (*a*) a schoolroom, and (*b*) a bedroom.

21. (*Men only.*) The opposite angles of a parallelogram are equal to one another. ABCD is a parallelogram; AB is produced to E, and CD to F, so that BE equals FD. Show that BEDF is a parallelogram.

(*Women only.*) Give the principal rules for keeping a dwelling in cleanliness, healthiness and comfort.

22. (*Men only.*) Two circles intersect a third circle, but do not intersect each other. Find the point from which the tangents, drawn to all three circles, are equal.

FOURTH WEEK.

1. Write a Large hand copy of '*Crystal Photographs.*'
Write a Small hand copy of '*The grateful mind in owing owes not.*'

2. Write for Dictation :—'Immediately after physical development, or even before, if required, we should place moral development, which is the supreme end of the individual, and the essential condition of social existence. We must fully recognise that in our system of education we take as little care of moral as of physical development. No use is made of systematic means, no method is employed from the early years of the child in moralisation. Before intellectual and scientific instruction we should place æsthetics, because the beautiful lies nearest to the good.'

3. How far is the popular idea that Reading, Writing, and Arithmetic are the basis of secular education correct? In what order of educative value would you place them? What is the proper position of Language in mental training?

4. Describe the various methods commonly employed for teaching young children the first steps of Reading. State which you prefer, and give your reasons.

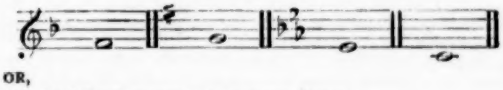
5. Write under each of the following intervals, its name (major thirds, etc.) :—

G B E A C
E F F G E *or*

Name (as major third, etc.), the following intervals :—

s t m' l d'
m f f s m

6. Write the subdominants of the following tonics :—



OR,

Write the following passage an octave lower.

d t m' r' s d' r' f' m' s l t r' d'.

7. Write a brief essay on '*The benefit of a sound education to the labouring classes.*'

8. (*Men only.*) Comment on the derivation and meaning of the following words:—(Essay I.) *affecting, veins, mummeries, creature, sect, embaseth*; (Essay II.) *quickest, obsequies, niceness, provoked, mates. Stoics.*

(*Women only.*) (Burke's Reflections) *meliorated, metaphysical, revenue, transcendental, polity, decorum, non-conforming, caballers.*

9. Prepare the outline of a lesson to Standard VII. on tides.

10. (*Men only.*) What were the chief causes that prompted the Government of Queensland to annex New Guinea? Describe the system by which the Australian Colonies obtain a supply of labourers.

(*Women only.*) Give a brief account of Stanley's last journey through Africa.

11. (*Men only.*) A ship makes a coasting voyage from Natal to London, calling at six of the ports in the British African possessions. State the names of these ports, their positions, and their principal articles of commerce.

(*Women only.*) What are the principal races of men to be found in Africa, and what is their condition as to government, religion, and civilization?

12. Give with dates the chief events which occurred in England during the latter half of the 12th century.

13. Point out some of the anomalies of our representative system at the beginning of the present century.

14. (*Men only.*) Give some account of the state of affairs in Scotland between the years 1640 and 1650.

15. A clock is set right at 2 p.m. on Monday, 12th December, and at 6 p.m. on Friday, 16th December, it is five minutes slow. How much has it lost per hour? Ans. 3 seconds.

16. A person sells out £3,162 10s. in Three per Cent. Stock at 97⅛, and buys in Bank Stock at 287½, paying his broker 2s. 6d. on each £100 of stock sold or bought. He receives on his investment an April dividend of 4 per cent., and another in October of 5 per cent. How far is his income affected by the exchange?

Ans. £1 13s. gain.

17. (*Men only.*) What is the area of a four-sided figure whose opposite angles are equal to two right angles, the length of the four sides being as follows:—AB, 12·5; AD, 17; DC, 17·5; and BC, 8 yards. Ans. 175·25 yards.

(*Women only.*) Cover a space not less than an inch square with Swiss darning.

18. (*Men only.*) The side of an octagon is 10 ft. What is its area?

Ans. 482·84271 ft.

(*Women only.*) Find the value of £1 1s. 1½d.

$$\times \frac{\frac{10}{17} + \frac{10}{17}}{\frac{5}{13} + \frac{25}{91}} \times \frac{\frac{10}{13} + \frac{7}{13}}{\frac{10}{16} + \frac{34}{15}}. \qquad \text{Ans. £1.}$$

19. (*Men only.*) Find the sum, difference, and products of the roots of the equation $4x^2 + 28x + 40 = 0$, without solving the equation. Ans 7, 3, 10.

(*Women only.*) What is said to be the '*line of comfort*' with regard to the temperature of a room? Describe the various methods of producing artificial heat.

20. (*Men only.*) Extract the cube root of $8x^3 - 36x^2y + 48x^2z + 54xy^2 + 96xz^2 - 144yz^2 + 108y^2z - 144xyz - 27y^3 + 64z^3$

Ans. $2x - 3y + 4z$.

(*Women only.*) Explain the different processes of washing (*a*) A calico shirt; (*b*) A flannel gown, and (*c*) A print dress respectively.

21. (*Men only.*) Write out Euclid I. 47. DBC and ABC are equilateral triangles, E is the middle point of DC. Show that four times the square on AE is equal to seven times the square on AB.

(*Women only.*) Explain the effects on the body of wearing damp shoes or clothing.

22. (*Men only.*) AB and AC touch a circle BC. Join BC, and from any point O on the circumference, let fall perpendiculars OD, OF, OE on AB, AC, BC respectively. Show that EOD, EOF, are equiangular.

SECOND YEAR.

SECOND WEEK.

1. As in First Year.
2. As in First Year.
3. What is the exact meaning of '*Organisation*' as applied to a school? Say how you would organise the work of a mixed school of 200 children of whom 50 were under seven years of age. What staff would you require, and how would you distribute the work among them?
4. Explain and illustrate by examples the following terms:—*Ambiguity; Fallacy; Premiss; Suppressio veri; Suggestio falsi; Hypothesis; Illative.*
5. As in First Year.
6. As in First Year.
7. Analyse Lines 64 to 73 of Scene 1, Act II., *King Lear*; and Parse *When, fright, to discover, thou, think, if, stand, could, reposure, faithed, no, what, should, this, ay, very.*
8. (*Men only.*) Write out a short analysis of Essay XIV., '*On Nobility.*'

(*Women only.*) What does Trench say about *the strata of words?* What does comparative philology teach us of the Aryans?

9. (*Men only.*) As in First Year.

(*Women only.*) Draw a Map of Canada, showing the character of the soil, the productions, and occupations.

10. (*Men only.*) As in First Year.

(*Women only.*) Describe the North Coast of N. America, referring (when you can) to the tracks of Arctic voyagers.

11. (*Men only.*) As in First Year.

(*Women only.*) Enumerate the principal scientific discoveries of the latter half of the 18th century. Point out their applications to manufactures and trade.

12. (*Men only.*) As in First Year.

(*Women only.*) What was the effect of the French Revolution of 1789 on the feelings of different classes in England? Explain the attitude of the leading British Statesmen towards the first French Republic.

13. (*Men only.*) Find two numbers such that their sum, their product, and the difference of their squares shall all be equal.

Ans. $\frac{3 \pm \sqrt{5}}{2}; \frac{1 \pm \sqrt{5}}{2}$.

(*Women only.*) Write a short life of Fox.

14. (*Men only.*) The present income of a railway company would justify a dividend of 4 per cent. on the whole amount of share capital. But £200,000 of the stock consists of 5 per cent. preference shares, so that the dividend for the remaining shares is only 3½ per cent. What is the whole amount of stock?

Ans. £600,000.

(*Women only.*) Write down the measurements for a muslin pinafore for a girl six years old.

15. (*Men only.*) The surface of a sphere is equal to that of a cube the length of whose side is one foot. Find the volume of each.

Ans. 1 and 1·382 c. ft.

(*Women only.*) As in first year.

16. (*Men only.*) The area of the surface of a ring is 120 square inches. If the length be 20 inches, find the inner diameter.

Ans. 4·46 inches.

(*Women only.*) As in First Year.

17. (*Men only.*) To describe a circle about a given equilateral and equiangular pentagon.

If the pentagon be PQRST, show that PR is parallel to ST.

(*Women only.*) Make an estimate of the proportion of expenditure allowable upon food out of a married workman's earnings of 5s. per day. Show how, out of that proportion, you would provide varied and wholesome nourishment for himself, his wife, and two school children, for each day for a week.

18. (*Men only.*) As in First Year.

(*Women only.*) Show the importance in their bearing upon health of the water, soil, aspect, drainage, and elevation of our dwellings.

FOURTH WEEK.

1. As in First Year.
2. As in First Year.
3. How does Mr. Herbert Spencer classify '*the leading kinds of activity that constitute human life*'? *or* how would Locke teach a child to read, and implant in its mind a love of books?
4. What are the objects to be kept in view in the teaching of history in schools? What kinds of historical facts possess most interest and value in the instruction of children?
5. As in First Year.
6. As in First Year.
7. Write a brief essay upon 'The study of human character.'
8. (*Men only.*) As in First Year.

(*Women only.*) Give the history and successive meanings of *pagan, heathen, sacrament, cardinal.*

9. (*Men only.*) As in First Year.

(*Women only.*) Describe a coasting voyage from New York to San Francisco, supposing the vessel transported across Darien and to put in at four of the principal North American seaports.

10. (*Men only.*) As in First Year.

(*Women only.*) Give some account of the Southern *or* Western group of the United States. Show in what directions colonisation spreads most rapidly in North America, and why.

11. (*Men only.*) As in First Year.

(*Women only.*) Name the principal events of the years 1814-15.

On what grounds would you justify the imprisonment of Napoleon in St. Helena? Where is his body now deposited?

12. (*Men only.*) As in First Year.

(*Women only.*) Give a brief account of the battle of Corunna and of the military operations in the Peninsula, immediately precedent and subsequent to it.

13. (*Men only.*) Determine what quantity must be subtracted from each term of the ratio a : b, in order that it may equal the ratio c : d.

Ans. $\frac{bc - ad}{c - d}$.

(*Women only.*) Write a short life of Lord Nelson.

14. (*Men only.*) If a and b are the roots of the equation $x^2 + px + q = 0$, show that $a^3 + b^3 = 3pq - p^3$, and find the value of $\frac{1}{a^3} + \frac{1}{b^3}$.

Ans. $\frac{3pq - p^3}{q^3}$.

(*Women only.*) Draw a diagram on sectional paper of a child's muslin pinafore.

15. (*Men only.*) Find how much it will cost to gild the inner surface of a hemispherical bowl 2 ft. 4 in. in diameter at 1½d. per square inch.

Ans. nearly £7 14s.

(*Women only.*) As in First Year.

16. (*Men only.*) A cylinder 5 feet long and 3 feet in diameter is closed by a hemisphere at each end. Find the area of the whole surface.

Ans. 75·3984 sq. ft.

(*Women only.*) As in First Year.

17. (*Men only.*) To describe a circle about a given triangle.

To describe a circle about a given figure ABCD, AB being parallel to CD, and AD = to BC, but AB not equal to CD.

(*Women only.*) Explain and illustrate from common cottage cookery the following observation:—'*Practical cookery may be an excellent intellectual training, as it teaches girls to apply in daily life the knowledge derived from various branches of study, and fixes those subjects more firmly in their minds.*'

18. (*Men only.*) As in First Year.

(*Women only.*) Describe the predisposing causes and the symptoms of the following diseases:—*Measles, mumps, scarlatina, ringworm, diphtheria, whooping cough.*

The names of any Certificate Candidates, not being students in any Training College, must be notified to the Education Department not later than the 1st of October.

Every Acting Teacher should see that his name is inserted in the Annual Return (Form IX.) Table XVII., followed by the words 'Christmas Examination, First or Second Year Papers' as the case may be.

All Students should procure Brook's Geography. There is none published so completely on the lines of the Scholarship and Certificate Examinations, or with the facts and figures more up to date.

CORRESPONDENCE.

We shall be pleased to reply briefly and through these columns to anyone seeking examinational information and advice.

This privilege does not, of course, extend to furnishing the solutions and answers of problems. All such communications should be addressed to 'THE QUERY EDITOR.'

Replies demanding urgency will be promptly forwarded per post on receipt of a stamped and addressed envelope. A post will be saved by writing direct to DR. GEORGE BEACH, M.A. *(Examination Editor of Practical Teacher),* STANLEY MOUNT, MACCLESFIELD.

F. G. F. (Canterbury).—A Pupil Teacher is free to leave at the end of his apprenticeship, whether this term be before or after the Scholarship Examination.

'JIM' (Hexham).—You have no legal claim. Settle on the terms proposed. Join the N.U.T.

A. R. (Old Hill).—See remarks on Drawing in Certificate Article.

M. F. (Ripley).—Phillips and Co., Liverpool.

CONFERENCE (Leeds).—Write to Mr. Albinson, Armley Higher Grade School, near Leeds.

A. P. (Cockermouth).—We cannot give any opinion about any particular strike. It is economic war, and war may be just or unjust.

F. R. (Pontypool).—Brook's Geography is the most recent and full; Hughes and Co., 3s. 6d.

TONE (Chesterfield).—You can take either notation.

G. Q. (Oakengates).—Model on Blackboard.

A. H. J. (Staines).—Many thanks. The suggestion should be complied with.

G. S. D. (Greenock).—The Scotch Code differs too much for your advice to be practicable.

W. P. H. (Aston).—Chambers' '*Reprints of English Classics*'; 4d.

'MUM' (Dolgelly).—Only one Language.

'JONES' (Castleton).—You must include your wife's salary.

S. T. W. (Dundee).—Your success is most gratifying. We are greatly obliged for your kind remarks.

H. S. C. (Maidstone).—Apply to Secretary, Science and Art Department.

EDITH (Hull).—You must get the Inspector to hear your Teaching, Recitation and Reading before the Scholarship Examination.

Y. E. (Tamworth).—You must extend your indentures under Art. 41 (f).

E. J. (Bolton).—We are not aware of any such book.

CERTIFICATE STUDENT (Bedford).—Tintern Abbey, etc., is published by W. and R. Chambers, price 4d., in their '*Reprints of English Classics*.'

K. L. (Lampeter).—The Classes are now in operation.

J. S. (Liverpool).—Your average fee cannot exceed 2½d. per week.

LETTERS ANSWERED BY ORDINARY POST.

G. H. G. (Hexthorpe), E. P. (Lewes), T. J. A. (Milford, Derby), M. F. (Shipton), C. B. C. (Windsor), 'TOM' (Whitelands T.C.), S. S. (Bilston), J. P. (Guildford), M. U. (Launceston), P. P. (Belfast), 'USE' (Sunderland), R. O. (Salford), P. S. (Redruth), M. J. B. (Brownhill), H. S. (Barrow), 'TOOL' (Rowley), I. I. (Darlington), F. T. (Oxford), J. T. B. (Dumfries), C. W. (Barden Hill), E. R. T. (Mumbles), J. T. M. (Hellifield), G. M. (Chapel-en-le Frith), R. K. (Blackpool), W. J. L. (Tannach, Wick), 'BOLD' (Smethwick), J. J. (Hanley), S. W. (Kingsley), 'CHEEK' (Exmouth), M. C. (Moor Row, Carnforth), J. L. F. (Canterbury), K. N. (Plumstead), C. W. L. (Oystermouth), R. J. H. (Thorpe Park, Peterborough), S. D. (Hyde), A. K. (Winchester Road), A. G. (Earlsgate). R. W. D. (Hillingdon), P. S. (College Green, Dublin), M. H. (Cefn Coed), J. L. (Ramsey), J. D. Churchtown), H. V. W. (Sowerby Bridge), T. H. J. (Newcastle-on-Tyne), L. T. J. (Ottery S. Mary), R. N. (Plymouth), E. J. C. (Saundersfoot), G. B. (Sheffield). O. M. (Tutbury), END (Walsall), T. T. (Wycombe), V. O. (Boston).

THE 1892 SCHOLARSHIP EXAMINATION.

BY DR. GEORGE BEACH, M.A.

Co-Author of 'A Manual of our Mother Tongue,' 'A Girls' Arithmetic,' Author of 'Elements of English,' 'Entertaining Readers,' etc.

MOST COMMON FAULTS IN 'SEWING,' ETC.

(Concluded from page 560.)

N.B.—The faults already spoken of as occurring in the lower standards will not be again mentioned in connection with the upper ones.

STANDARDS VI. AND VII.—*Cutting-out.*—Faults as in Standard V.

Button-holing.—Faults as in Standard IV.

Print Patch.—Correspondence of patterns often incomplete. Back of patch badly worked as to cutting and button-hole stitch.

Sewing and Felling.—Faults as in Standard III.

Gusseting.—Using sleeve instead of hip-gusset; Careless arrangement of triangle before commencing; Corners set in badly; Junction with seam inartistic (cobbling); Seam insecure at points of turning over of gussets; Back of gusset bad shape with irregular corners; Superfluous calico not carefully cut away.

Running and Felling,—Placing irregular, first fold too deep; Raw edge too near folded edge; Material stretched during placing, causing it to frill; Unfolded edge placed too near folded edge; Width of fell irregular; Fell not flat through puckering.

Marking.—Faults as in Standard V.; Curved and complex letters, such as S, O, W, M, Y, often badly executed; Proper number of threads not taken; Threads of material drawn too tight.

Hemming, whipping, and setting on frill.—Roll wrong side of material; Roll uneven and too flat; Whipping-stitches of unequal distances from each other and from the roll; Too much or too little frill allowed in proportion to the material; Uneven drawing of frill; Setting-on stitches not coinciding with whipped folds; Hem of frill not narrow enough; Corners both of frill and band badly finished.

Knitting.—Faults of memory; First stitch badly done, causing the picking up of gusset to be rough and uneven.

Darning of Diagonal Cut.—Materials not matching, either of different fineness or even different kinds; Edges of cut not neatly darned in; Irregularity of triangles; Loops not cut level.

II. ALGEBRA.

(1) A and B have 18 coins between them, which are all shillings or pennies; A has three times as many shillings as pennies, and B has just as many shillings as pennies; Also A has ninepence more than B. How much has each? (*Question 17, p. 561.*)

Let A's number of coins $= x$

But $\frac{3}{4}x$ are shillings $= 9x$ in pence

But $\frac{1}{4}x$ are pence $= \frac{1}{4}x$ in pence.

$\therefore$ Total value of A's share in pence $= \frac{37}{4}x$

But B has 9d. less than A.

$\therefore$ Total value of B's share in pence $= \frac{37}{4}x - 9$

Again

B's number of coins $= 18 - x$

But $\frac{1}{2}(18 - x)$ are shillings $= 6(18 - x)$ in pence

But $\frac{1}{2}(18 - x)$ are pence $= \frac{1}{2}(18 - x)$ in pence.

$\therefore$ Total value of B's share in pence $= \frac{13}{2}(18 - x) = \frac{234 - 13x}{2}$

$\therefore$ Equating $\frac{234 - 13x}{2} = \frac{37}{4}x - 9$

$$468 - 26x = 37x - 36$$
$$-63x = -504$$

$\therefore \underline{x = 8}$ Ans.

(2) *Factorising*.—Everybody must learn the ordinary results of multiplication and division. These can be got from any ordinary Algebra or by working them out. There are a few other cases, however, which it is well to know how to deal with.

(*a*) $\frac{x^n + y^n}{x + y} = x^{n-1} - x^{n-2}y + x^{n-3}y^2 - x^{n-4}y^3 \ldots\ldots$

(*b*) $x^4 + x^2y^2 + y^4 = x^4 + 2x^2y^2 + y^4 - x^2y^2 = (x^2 + y^2)^2 - (xy)^2 = (x^2 + y^2 + xy)(x^2 + y^2 - xy)$.

(*c*) $6x^2 - xy - 15y^2 = 6x^2 + 9xy - 10xy - 15y^2 = 3x(2x + 3y) - 5y(2x + 3y) = (3x - 5y)(2x + 3y)$.

This method is simply the analysis of the multiplication into the two lines of the actual sum.

$$\begin{array}{r} 2x + 3y \\ 3x - 5y \\ \hline 6x^2 + 9xy \\ \quad - 10xy - 15y^2 \\ \hline \underline{6x^2 - xy - 15y^2.} \end{array}$$

In any trinomial (and the same rule applies to polynomials) if we can split up the second co-efficient into two parts, so that the first co-efficient shall be to the first part as the second part is to the third co-efficient, then we can factorise.

But how is this to be done? Take the above example. Multiply the co-efficients of the first and third terms. Then factorise this product so that the sum of the factors equals the co-efficient of the second term. These two factors will be the aforesaid parts into which the second co-efficient should be separated.

E.g., $6 \times -15 = -90$, Now $9x - 10 = 90$ and the sum of $9 - 10 = -1$.

III. FAULTS IN MAP-DRAWING:—

Names are written in ordinary MS.; the printing is of uniform size, and not differentiated to indicate relative importance; the printing is unnecessarily executed in every direction. (Where possible, the names should be all horizontal.) Names of ports are written in the sea-space, and names of capes and gulfs in the land area; boundaries are frequently unnamed; lines of Latitude and Longitude are omitted; the aid of coloured leads is neglected, and the coast line made too thin and indistinct; mountains are very badly depicted; the source of a river is made as wide as, or wider than, its mouth; the tributaries look stuck into the main stream instead of appearing to glide into it; a border for the map is neglected.

IV. THE FAVOURITE PROPOSITIONS IN EUCLID for the last eleven years:—

(*a*) *Book I.* Propositions 1, 3, 6, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 25, 28, 30, 33, 35, 36, 38, 39, 40, 42, 43, 44, have not been given at all.

Propositions 2, 4, 7, 26, 27, 37, 41, 45, 46 have been set *once*.
" 8, 31, 48 " " " *twice*.
" 5, 20, 29, 32, 34 " " " *thrice*.
" 47 has " " *five times*.

(*b*) *Book II.* Propositions 1, 3, 6, 8, 10, 12 have not been set at all.
" 2, 7, 9, 11, 14 have been set *once*.
" 4 and 5 " " " *twice*.
" 13 has " " *thrice*.

The axioms, definitions, postulates, and algebraic proofs of the Second Books have been frequently required. No deductions have been set except upon the propositions required. The greatest surprise furnished by this analysis is that an important proposition like II. 12 should have been altogether disregarded. This omission will sooner or later be discovered, and the proposition will at once be propounded.

V. HISTORY, 1887.

Very few histories (or even date books) have been brought up to the present time, so we append a short summary of recent events chiefly taken from the pages of '*Whitaker*.'

GENERAL EVENTS:—

January. Mr. Goschen, formerly a Liberal Cabinet Minister, accepted the post of Chancellor of the Exchequer in Lord Salisbury's Ministry. Mr. Stanley left England to take charge of the African expedition for the relief of Emin Pasha. Serious riots in Belfast; mob fired upon by police.

February. Queen's Jubilee celebrated in India—25,000 people released from gaol.

March. Queen laid the foundation-stone of New Law Courts at Birmingham.

April. Publication by the *Times* of a fac-simile letter purporting to be written by Mr. Parnell, approving of the Phœnix Park assassinations.

May.—Jubilee Exhibition at Manchester opened. Royal proclamation issued directing the coinage of double florins. Consols sold at 103⅛, the highest price on record.

June.—Grand celebration of the Queen's Jubilee; Her Majesty's supremacy over Zululand proclaimed at Etshowe.

SCHOLARSHIP ROUTINE FOR MAY, 1892.

DAYS	FIRST WEEK				SECOND WEEK					THIRD WEEK					FOURTH WEEK				
	Language	Science	Drawing	English Composition	Language	Science	Drawing	Repetition, Literature, and Penmanship	Music	Language	Science	Drawing	English Composition	Repetition, Literature, and Penmanship	Language	Music			Repetition, Literature, and Penmanship
	First Hour	Second Hour		Third Hour	First Hour	Second Hour		Third Hoir		First Hour	Second Hour		Third Hour		First Hour	Second Hour		Third Hour	
MONDAY	Simultaneous Simple Equations — Learn to describe the various Stitches	History from 1819 to 1836		Language	Problems leading to Simple Simultaneous Equations — Typical Foods	Dates from 1819 to 1843		Language		Cube Root of Algebra — Precautions against Infection and Contagion	History from 1843 to 1856		Language		Cube and Square Root of Algebra — Miscellaneous History	Dates from 1843 to 1867			Language	
TUESDAY	First 32 Propositions of Euclid, Book I. — Paper Pattern of Child's Drawers	General Geography of Central America		Science	Euclid, Book II. — Paper Pattern of Child's Frock Bodice	General Geography of Africa		Science		Euclid, Book I. — Hedge-tear Darn	General Geography of Asia		Latitude and Longitude		Euclid, Book II. — Cross-cut Darn	General Geography of Polynesia			Climate and Productions	
WEDNESDAY	Mental Arithmetic	Latin Roots		How to teach Singing	Stocks	Teutonic Roots and Affixes		How to Preserve Discipline		Discount	Latin Prefixes		How to give an Object Lesson		Problems of 'Varied Agents'	Greek Prefixes			How to Draw a Map	
THURSDAY	Simultaneous Simple Equations — The Post Office Facilities for Investments	History from 1836 to 1848		Paraphrasing and Repetition	Square Root of Algebra — How to make Soup, Tea, Coffee and Barley-water	England under the Plantagenets		Parsing and Analysis		Quadratic Equations — Cost and Particulars of 'Outfits'	England under the Plantagenets		English Syntax from Text Book		Quadratic Equations — Revise Dates	England during the Wars of the Roses			Paraphrasing and Analysis	
FRIDAY	Deductions of Euclid, Book II. — Calico Sampler	Map of Western States of America		Mensuration — Square Root	Any Notes on Euclid, Book I. — Flannel Sampler	General Geography of Africa		Mensuration — Stocks		Any Notes on Euclid, Book II. — Diagram of Chemise	General Geography of Asia		Problems of Motion		Deductions upon Euclid, Book I. — Diagram of Nightshirt	Maps of Queensland, South Australia, West Australia			Theory of Discount, etc.	
SATURDAY																			

July.—Grand review of 60,000 men at Aldershot; Eighteen Irish counties proclaimed under the Crimes Act.

August.—The Nizam of Hyderabad made an offer of £600,000 towards the frontier defences of N.W. India.

September.—Parnellite meeting at Mitchelstown when the people, having driven the police to their barracks, were fired upon, with fatal results in three instances. Mr. W. O'Brien, M.P. imprisoned for three months for inciting tenants to resist the law.

October.—Four Englishmen captured near Smyrna by brigands; released for £750.

November.—Truro Cathedral consecrated. First sod of Manchester Ship Canal cut at Eastham. Great riot in Trafalgar Square; military called out. Lord Mayor of Dublin sentenced to two months' imprisonment.

PARLIAMENTARY RECORD 1887.

The main feature of the Session was the great height to which party-feeling ran. Many indecorous scenes were enacted and numerous warnings were uttered and penalties inflicted by the speaker. Twice during the discussion upon the Crimes Act (Ireland), the whole Opposition, headed by Mr. Gladstone, left the House in a body and refused to vote.

The Irish National League was proclaimed, and due notice given thereof to both Houses on 19th. August.

The principal Acts passed were Crimes Act, Irish Land Bill, Allotments Act, Mines Regulation Act, The Truck Act, and the Merchandise Marks Act.

(To be continued.)

N.B.—For Correspondence, see end of Certificate Article.

SELECTED GOVERNMENT QUESTIONS.

FIRST WEEK.

1. Analyse the following passage and parse the italicised words:—

> *For* therein sits the nature of a *King*,
> His honour, *virtue*, merit, and chief praise,
> *That for* the public *such* a weight he bears,
> Yet he who reigns *within himself*, and rules
> Passions, desires, and fears is *more* a *King*,
> *Which* every wise and virtuous man attains;
> And who *attains*, not ill *aspires* to rule
> Cities of men or headstrong multitudes,
> Subject *himself* to anarchy *within*,
> Or lawless passions in him *which* he serves.

2. Of the 15 nouns in the above passage, 5 are of Anglo-Saxon, 8 of Latin, and 2 of Greek origin. Classify them accordingly. About which word only may there be a difference of opinion, and why?

3. Draw a map of South Africa.

4. Explain as to one of the upper standards, why it is warmer in summer than in winter, using such illustrations as you consider most suitable.

5. Describe a voyage from Southampton around Cape Horn to Lima.

6. Arrange in chronological order and give the dates of:—*Union of Great Britain and Ireland; Habeas Corpus Act; Statute of Præmunire; Catholic Emancipation; Battle of Brunanburgh; Capture of Magdala; The Constitutions of Clarendon; and the Indian Mutiny.*

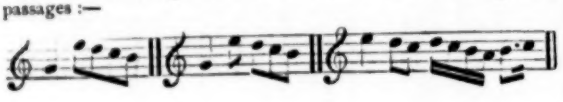
7. What is meant by a *Minister of State*; a *Spiritual Peer*; a *Knight of the Shire*; a *Lord Chancellor*; a *Chief Justice*; an *Admiral*; a *Field Marshal*; a *Regent*, and a *Governor-General*?

Illustrate *eight* of these terms by names of Englishmen now living.

8. What is a criticism lesson? Under the head of 'Discipline,' what points would you attend to in such a lesson?

9. Describe the best method of proceeding in teaching a new song, *either* to infants *or* older children.

10. Place time signatures before each of the following three passages:—



OR,

Write the names of the respective *Dohs* when *Lah* is B, D and E, and the names of the *Lahs* in Keys D, F, and B♭.

11. Write the musical terms for *moderately loud, decreasing, majestically, with spirit, 80 crotchets a minute.*

12. In what time will £436 10s. amount to £568 18$\frac{1}{10}$s., at 7 per cent. per annum simple interest. Ans. 4½ years.

13. Define *principal, amount, interest* (simple and compound), *discounts, stocks, consols, annuities, percentage, average, premium, present worth*; and show that *percentage* is a ratio.

14. (*Men only.*) Write out Euclid I. 48. Prove this proposition by *reductio ad absurdum.*

(*Women only.*) Give directions to a first class for setting in a patch, stating your reasons for each step in the process.

15. (*Men only.*) Write out Euclid II. 14. Describe a right-angled isosceles triangle equal to a given rectilineal figure.

(*Women only.*) How would you apportion an income of £60 per annum for a single woman not living with her parents?

16. (*Men only.*) A road runs round a circular shrubbery. The outer circumference is 500 feet, and the inner circumference is 420 feet, find the area of the road. Ans. 5,857 sq. ft.

(*Women only.*) Into what classes may food-stuffs be divided. Give examples of each.

17. (*Men only.*) If $2s. = (a + b + c)$, find the value of $s(s-a)(s-b)(s-c)$, and show that if any two of the quantities a, b, c, be equal, the result is divisible by the square of the third.

Ans. $\frac{1}{16}(a+b+c)(b+c-a)(c+a-b)(a+b-c)$.

(*Women only.*) Write notes of a lesson on *Respiration.*

18. (*Men only.*) Extract the square root of $x^2 + 9 + 4a - 6x - 12\frac{a}{x} + 4\frac{a^2}{x^2}$ Ans. $x - 3 + \frac{2a}{x}$.

SECOND WEEK.

1. Make a list of the Auxiliary Verbs, distinguishing those of Mood, Tense, and Voice.

2. Show by definition and examples what is meant by (*a*) substantive, (*b*) intransitive, (*c*) passive, (*d*) defective, (*e*) strong (irregular), and (*f*) weak (irregular) verbs. To which of the two last named classes would you refer the verbs *to lead, to spread, to show, to sweep, to spend*, and why?

3. Draw a map of Ireland.

4. What have been the chief changes in the *political* map of Europe since 1815? What are the great divisions of Europe according to (*a*) Race, (*b*) Language, (*c*) Religion?

5. Describe the physical features, commerce, and climate of Brazil.

6. What is meant by the '*Revival of Learning*'? When did it take place, and to what causes may it be attributed? Mention some of the leaders of the movement in England.

7. What were the chief causes of the downfall of Napoleon; and to what do you ascribe his rapid rise?

8. Write notes of a lesson on the commercial importance of the Rhine, Vistula and Danube.

9. In giving a lesson on a river which is the better plan, (*a*) to speak first of a particular river which the children have seen, or (*b*) to start with a definition and a general description? Give reasons for your opinion.

10. Write *over* each of the following notes its pitch name, *under* it, its duration name, *after* it, its corresponding rest:—

OR,

Write *over* each of the following notes its name with regard to its scale position (*third, fifth, etc.*), and under each the *time* name:—

| f :— | r' : | l : | m' :— | s, :— | m, : | f :— | : ‖

11. Write the scales of two flats and two sharps; OR write a major scale with *Ray* as tonic, introducing accidentals to preserve the proper intervals.

12. (*Men only.*) Find to four places of decimals the value of $2\sqrt{3} - \frac{1}{2}\sqrt{12} + \sqrt{27}$.

Ans. 6·9282.

13. Take ·0625 of £28 6s. from $\frac{7}{11}$ of £20$\frac{4}{45}$. Find by what decimal the result must be multiplied to produce £2 17s. 1$\frac{1}{2}$d.

Ans. ·16.

14. (*Men only.*) If any right-angled triangle the square, which is described on the side subtending the right angle, is equal to the squares described on the sides containing the right-angle. State the converse of this proposition.

15. (*Women only.*) Write out rules for fine drawing a rent in a piece of flannel.

16. (*Men only.*) Write out Euclid II. 5. Of all rectangles with the same perimeter the square has the greatest area.

(*Women only.*) Mention some of the most wholesome and economical modes of cooking meat, and specify the times required for each process. How may the juices be best preserved? What uses can be made of dripping?

17. (*Men only.*) The difference between the diameter and the circumference of a circle is 10 feet. Find the diameter.

Ans. 4·67 feet.

(*Women only.*) What precautions ought to be taken in a school against the spread of infectious complaints?

18. (*Men only.*) $x^{2r} - x^r y^s + \frac{y^{2s}}{4}$ by $x^{2r} + x^r y^s + \frac{y^{2s}}{4}$

Ans. $x^{4r} - \frac{1}{2} x^{2r} y^{2s} + \frac{y^{4s}}{4}$

(*Women only.*) Give the names of the different cereals used in this country, and explain their nutritive qualities.

19. (*Men only*) Solve the equations.

(*a*) $\cdot 5x + \cdot 6x + \cdot 8 = \cdot 75x + \cdot 25$.

Ans. $-\frac{11}{7}$

(*b*) $\left(\frac{a}{b} + \frac{b}{a}\right)x - \left(\frac{a}{b} - \frac{b}{a}\right) + 2x = 0$.

Ans. $\frac{a - b}{a + b}$.

THIRD WEEK.

1. Write an essay on 'Modes of Travelling.'

2. Examine and illustrate the Etymology of the following words:—*Traveller, visage, passions, survive, despair, level, boundless, lone, decay, colossal, desert, lip, pedestal.*

3. Draw a map of the United States.

4. Give a short description of (*a*) The dependencies of Holland; (*b*) Any people of Dutch descent not now politically dependent upon Holland; (*c*) Mention any places named by Dutch navigators which are not now politically connected with Holland.

5. Describe a coasting voyage from Southampton, by way of Lisbon, to Constantinople, taking in cargo at six of the principal ports on the northern shores of the Mediterranean.

6. Give a short sketch of the rebellion of 'Forty-five.'

7. Describe the progress of Parliamentary Reform under the House of Hanover.

8. In giving a lesson on the Duke of Wellington, show what use you would make of comparison and contrast with any other historical characters.

9. What is an object lesson? Show that mere sight is not necessarily knowledge.

10. Explain the following terms, *Dolce, Allegro, Vivace, Diminuendo, Rallentando, Lento, Gracioso.*

11. Write the pitch and duration names of the following notes, also the signs for rests of corresponding value:—

OR,

State which notes of the common scale are altered by the *Lah* or *minor* mode.

12. (*Men only.*) Give the rule for extraction of the square root? How would you find the 4th root of a number? Evaluate $\frac{\cdot 00875}{1\cdot 26}$.

Ans. ·08$\frac{1}{2}$.

13. Find the value of $\frac{3}{4}$ of $\frac{1}{9\frac{1}{3}}$ of £1 18s. 0d. + $\frac{2}{3}$ of ·0375 of 15s. 0d. + $\frac{3}{5}$ of ·4$\frac{2}{9}$ of 8s. 3d., and express the result as a decimal of £5.

Ans. ·047916.

14. Add together the products of each pair of the numbers 150, 225, 375 and find the difference between this sum and the product of all three numbers.

Ans. 12,481,875.

15. (*Men only.*) Write out Euclid I. 43. What is the converse of this proposition?

(*Women only.*) There are nineteen parts in a shirt. Name them.

16. (*Men only.*) Write out Euclid II. 13. If ABC be an isosceles triangle having AB equal to AC, and if D be taken in AC so that BD is equal to BC; then the square on BC is equal to the rectangle AC, CD.

(*Women only.*) State fully the reasons for keeping a schoolroom well ventilated—the best modes of securing its ventilation, and the effect which different modes of warming the room would have on the ventilation.

17. (*Men only.*) The sides of a rectangle are in the proportion of 2 to 3, and the area is 210 sq. ft. Find the sides.

Ans. 11·832 and 17·748 ft.

(*Women only.*) Give receipts for a meat pudding, a light pudding for invalids, and a meat soup.

18. (*Men only.*) A man travelled 105 miles, and then found that if he had not travelled so fast by two miles an hour, he would have been six hours longer in performing the journey. Determine his rate of travelling.

Ans. 7 miles an hour.

(*Women only.*) What are the special advantages in woollen material for clothing? Is any special care required in washing woollen articles?

19. (*Men only*) $\left.\begin{array}{l} 3x + 2y = 13 \\ 3y + 2z = 8 \\ 3z + 2x = 9 \end{array}\right\}$ Ans. $x = 3, y = 2, z = 1$.

FOURTH WEEK.

1. Paraphrase:—

I met a traveller from an antique land,
Who said, 'Two vast and trunkless legs of stone
Stand in the desert. Near them on the sand,
Half-sunk, a shattered visage lies, whose frown
And wrinkled lip and sneer of cold command
Tell that the sculptor well those passions read
Which still survive stamped on those lifeless things,
The hand that mocked them, and the heart that fed.'

2. Analyse the following, and parse the italicised words:—

And *on* the pedestal *these* words *appear*:
'*My name* is Ozymandias, *King* of Kings,
Look on my works, *ye mighty*, and despair!'
Nothing besides remains. *Round* the decay
Of *that* colossal wreck, boundless and *bare*
The lone and level *sands* stretch *far away*.

3. Draw a map of Hindostan.

4. State the cause of difference between the tides in (*a*) The Pacific Ocean, (*b*) The Atlantic Ocean, (*c*) The British Seas, and (*d*) The Baltic Sea.

5. Describe the situation and account for the rapid growth of Crewe, Barrow-in-Furness, Middlesbrough, Bournemouth, Blackpool, Brindisi, Port Said, San Francisco, Winnipeg.

6. Arrange in chronological order and give the dates of *Discovery of America, Battles of Nile, Flodden, Bannockburn, and Marston Moor, and the Accessions of Stephen, Anne, and Elizabeth.*

7. Mention the chief warriors, statesmen, and writers who flourished in the reign of George II., and give an account of *any one* of them.

8. What rules have you learned to observe in giving out dictation?

9. After explaining to a class the effect of mountain ranges upon climate, show how you might lead the children to seek further proofs for themselves.

10. State the key of each of the following two passages:—

Name the following relations of the minor or Lah mode:—*Dominant, Minor* or essential sixth, *Leading-note* or essential seventh, *Supertonic.*

11. Write the scale of E minor, descending and ascending; OR, Write the upper part of the scale in the minor mode, ascending and descending in all the forms you know.

12. (*Men only.*) Extract the square root of ·892143 of 12½ sq. ft.
Ans. 3·332 ft.

13. Divide 16 acres 3 roods 2 poles among four brothers, giving the eldest brother half as much again as each of the others; and find the value of the eldest brother's share at a guinea for each pole.

Ans. Eldest brother - - 5 acres 2 roods 14 pls.
Every other brother 3 acres 2 roods 36 pls.
Value - - £938 14s.

14. How much will remain of ⅞ of £25·2 after the following articles been paid for, viz.: ⅝ yds. of cloth at £·8 per yard; and 12·2 yds. of linen at £⅛ per yard? Ans. £16·635.

15. (*Men only.*) Write out Euclid I. 32. Divide a right-angled triangle into two isosceles triangles.

(*Women only.*) Describe *with exactness* the method by which you would teach a child to make a button-hole.

16. (*Men only.*) Write out Euclid II. 12. If the side BC of an equilateral triangle ABC be produced to D, prove that the square on AD is equal to the squares on DC, CA with the rectangle contained by DC, CA.

(*Women only.*) State what ingredients in food produce (*a*) bone, (*b*) fat, (*c*) warmth in the human system.

17. (*Men only.*) A square and a regular hexagon have the same perimeter. Compare their areas.

Ans. The hexagon is 1·1547 times the square.

(*Women only.*) What are the preparations that should be made for washing-day? In what order should the clothes be washed?

18. (*Men only.*) Divide $x^2 + 1 + \frac{1}{x^2}$ by $x - 1 + \frac{1}{x}$.

Ans. $x + 1 + \frac{1}{x}$.

(*Women only.*) Write down briefly any advice which would be helpful to a schoolgirl of 13 on leaving for a place as under-nurse-maid.

19. (*Men only.*) A company at an inn had £7 4s. to pay. Before the bill was settled three of them decamped. This compelled the remainder to pay 4s. each more than they ought. Of how many did the company consist? Ans. 12.

(*N.B.—For Correspondence, see end of Certificate Article.*)

—o—

Owing to pressure on our space we are compelled to hold over till next issue the following contributions:—'Model Answers to Certificate Questions,' 'Standard Problems, Step by Step,' 'Drawing Lessons for Infants,' 'Recreative Botanical Papers,' 'Query Column,' 'Publications Received,' 'Publications Reviewed,' as well as the result of the PRIZE ANECDOTE COMPETITION.

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PROBLEMS.

STANDARD VI.

Card 1.

1. What part of a guinea is equal to $\frac{3}{7}$ of 19 florins?
2. A boy put £3 10s. in a Savings Bank which allowed interest at the rate of $2\frac{1}{2}$ per cent. He drew it out after it had been deposited 10 months. What amount did he get?
3. What decimal must be added to the product of $2\frac{5}{8}$ and $5\frac{1}{4}$, so that the sum may be 20·74?
4. A sets out on a tricycle at the rate of 7 miles an hour. In an hour and a quarter B follows him on a bicycle at the rate of 13 miles an hour. In what time will B overtake A?

Card 2.

1. A can do half a piece of work in 3 days, and B can do the whole of it in 5 days. How long would it take them working together?
2. If a man can walk 54·25 miles in 10·5 hours, how many miles is that an hour?
3. A bankrupt pays 6s. 10d. in the pound. How much is lost on a debt of £355 10s.?
4. Divide 27·692 by ·63 without reducing the dividend to a vulgar fraction.

Card 3.

1. A woman spent $\frac{4}{5}$ of her money, and then found she had half-a-crown short of a sovereign. How much had she at first?
2. What is the value of £8 5s. × ·32$\dot{7}$?
3. Find the interest on £1,596 17s. 6d. for 136 days at 4 per cent.
4. If £20 5s. was given for a piece of cloth at 15s. a yard, what would it have cost if it had been 6d. a yard dearer?

Card 4.

1. What vulgar fraction must be added to ·0$\dot{4}$28571 + ·0$\dot{8}$3 + ·59$\dot{1}\dot{6}$ to make the result unity?
2. Reduce ·45625 of 12s. 6d. to the decimal of a sovereign.
3. In what time will £375 amount to £383 8s. 9d. at 3 per cent.?
4. A dealer by selling rice at £2 15s. 6d. per cwt., which cost £2 7s. per cwt., gained £8 1s. 6d. What quantity did he sell?

Card 5.

1. One pipe can fill a cistern in 10 minutes and another pipe can empty it in 8 minutes. If the cistern is three-quarters full, and both pipes are opened together, in what time will it be empty?
2. If £31 4s. is gained in 78 days, in how many weeks would £173 12s. be gained?
3. A person owned ·475 of a ship, and sold ·4 of his share for £1,406; what was the value of the ship?
4. If the smaller of two fractions is $\frac{5}{18}$, and their difference is $\frac{7}{24}$, what is the sum of the two fractions?

Card 6.

1. By investing £1,520 I obtain an income of £68 8s. per annum. What is the rate per cent.?
2. If eggs are sold at 1·25s. per score, what would be the cost of 9·6 dozen?
3. How many books, each $\frac{3}{8}$ inch broad, can be placed on a shelf $3\frac{3}{4}$ yards long?
4. Represent 29 tons 13 cwt. 2 qrs. 7 lbs. decimally in tons.

Card 7.

1. What sum will gain £185 17s. in 3 years at $3\frac{1}{2}$ per cent.?
2. A postage-stamp is 1 inch long and $\frac{3}{4}$ inch broad. What space would be covered by five pounds' worth of penny stamps?
3. A man owns ·41 of an estate, and his brother owns the remainder. The difference in the value of their shares is £1,179. What is the value of the estate?
4. After paying an income-tax of 7d. in the pound a gentleman had £1,223 5s. left. Find his income.

Card 8.

1. What decimal of £7 16s. is $\frac{5}{12}$ of $\frac{9}{10}$ of 3s. 8d.?
2. If $\frac{5}{8}$ of a lb. of tea cost 2s. $3\frac{1}{2}$d., what is the value of $\frac{37}{84}$ of a cwt.?
3. To what sum will £1,485 amount to in $4\frac{1}{4}$ years at $2\frac{3}{4}$ per cent.?
4. The product of two numbers was 2·729046, and one was $\frac{74}{1000}$. Give the other number decimally.

Card 9.

1. Take the least from the greatest of ·48$\dot{7}\dot{5}$, ·4$\dot{8}\dot{7}\dot{5}$, ·4$\dot{8}7\dot{5}$, and ·4$\dot{8}7\dot{5}$.
2. A bankrupt owes £1,561 10s., and possesses £349 5s. 9d. Find what he can pay in the pound, if £50 is charged for expenses.
3. A can build a wall in 6 days, B in 8 days, and C in 9 days. How long would it take them working together?
4. If the interest on £146 for $12\frac{1}{2}$ days is 3s. 6d., what is the rate per cent. per annum?

Card 10.

1. Divide a guinea among three boys, giving the second boy twice as much as the first boy, and the third boy twice as much as the second boy.
2. What is the interest on £583 18s. 4d. for 38 weeks at $2\frac{1}{2}$ per cent.?
3. An army lost ·37 of its number in battle and ·19 by disease. The number left was 170,280; what was the original number of the army?
4. If the divisor is $\frac{3}{8}$ of $\frac{6}{25}$, and the quotient is $\frac{9}{14}$ of $9\frac{1}{3}$, what is the dividend?

Card 11.

1. If I get an income of £292 10s. by investing money at 4 per cent., how much have I invested?
2. A boy spent $\frac{1}{3}$ of his money, then $\frac{1}{5}$ of the remainder, and found he had 2s. 8d. left. How much had he at first?
3. A dealer sold 26 cwt. 67 lbs. of coffee for £235 16s. 9d. What was the price per quarter?
4. Divide 100 into two parts, so that one part shall exceed the other by 7·648.

Card 12.

1. Take ·13$\dot{8}$ of a day from 6·875 hours, and give the answer in minutes.
2. £850 was put into a bank at $4\frac{1}{2}$ per cent., and allowed to remain until it amounted to £1,117 15s. at simple interest. How long was it in the bank?
3. If a man walks $12\frac{1}{2}$ miles in $3\frac{1}{2}$ hours, how long will it take him to walk $56\frac{1}{4}$ miles at the same rate?
4. If $\frac{9}{14}$ of $\frac{4}{15}$ of $\frac{21}{50}$ of a number is 36, what is the number?

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Card 13.

1. If 45 lamps are required for a road 4½ furlongs long, how many will be required for 20 miles 990 yards?
2. What sum of money will amount to £2,019 8s. in 3 years at 3¼ per cent.?
3. If a sovereign is worth 25·25 francs, how many sovereigns are worth 4,923¾ francs?
4. The face of a clock is 16½ inches in circumference. What decimal of a mile will the minute-hand travel during the month of March?

Card 14.

1. Express the difference between ·408 and ·408 as a vulgar fraction.
2. Find the simple interest on £478 6s. 8d. for 5 months at 3¾ per cent.
3. An estate is worth £36,000. A person entitled to ⅓ of it sells $\frac{7}{19}$ of his share. What is the value of the remainder of his share?
4. If a man can build a wall in 20 days, working 8·25 hours a day, how long would it take him if he works 6·875 hours a day?

Card 15.

1. A man and a boy can do a piece of work in 3 days, and the man alone can do it in 5 days. How long would it take the boy to do it?
2. At what rate per cent. will the interest on £1,050 amount to £126 in 3 years?
3. The product of two numbers is ·00986, and one of the numbers is ·029. Find the sum of the two numbers.
4. If £470 10s. is lent for 3 months, how long ought £352 17s. 6d. to be lent in return?

Card 16.

1. What is the value of 5·35 of 6·95 of £80?
2. If the ratio of the diameter of a wheel to the circumference is as 7 : 22, what is the diameter when the circumference is 41 ft. 3 in.?
3. If £720 be lent for 1⅔ years at 2¾ per cent., what amount will be returned at the end of that time?
4. If 5 lbs. of rice are worth 6 lbs. of sugar, and rice is 3d. per lb., what will be the cost of 7½ lbs. of rice and 9 lbs. of sugar?

Card 17.

1. By what fraction must 6⅞ be multiplied to give a product equal to $\frac{5}{9} + 1\frac{1}{2} + \frac{7}{15}$?
2. What sum will gain £78 15s. in a year at 4½ per cent.?
3. A cistern is filled by one tap in 12 minutes, and by a second tap in 20 minutes. It can be emptied by a third tap in 18 minutes. In what time will it be filled if all the three taps are opened together?
4. A man's weekly wages are £1 15s. 6d. He is fined 3d. when he is late, and at the end of 30 weeks he has received £53 0s. 9d. How often was he late?

Card 18.

1. What decimal of ¾ of a crown is ⅝ of a guinea?
2. A tap discharges 27 quarts in ⅖ of a minute. How long will it take to empty a cistern containing 675 gallons?
3. In what time will £2,056·25 produce £123·375 interest at 4 per cent.?
4. If ⅘ of an estate is worth £1,333 6s. 8d., what is the value of ·23 of it?

Card 19.

1. If a clerk have a salary of £192 10s. a year, how much is due to him if he commenced work on April 1st and left on the evening of November 5th?
2. At what rate per cent. will £270 amount to £418 10s. in 5⅓ years?
3. The larger of two numbers is 95·012, and the smaller is one-fourth of the larger. What is the difference of the two numbers?
4. Take ·03125 of two guineas from half-a-guinea.

Card 20.

1. If 36 horses can plough 5⅓ acres in 3 days, how many horses can plough 14⅔ acres in the same time?
2. Multiply 37 thousandths by 16 ten-thousandths, and divide the product by ⅝ of ·1184.
3. If I borrow £650, and repay the money at the end of 219 days, what interest will be due at 3½ per cent. per annum?
4. Find the value decimally of 14 tons 19½ cwt. at £71·375 per ton.

Card 21.

1. A boy had a number of marbles. After losing ⅝ of them and then ⅝ of the remainder, he had 10 left. How many had he at first?
2. What decimal multiplied by ·63 will give ·3167?
3. If 8 cwt. 3 qrs. 24 lbs. cost £18 16s. 6d., what quantity can be bought for £49 10s.?
4. How much money lent for 4½ years at 3 per cent. will amount to £289 8s. 6d.?

Card 22.

1. Reduce 10½ guineas to the decimal of £3 10s. 10½d.
2. Divide the product of ·3605 and 5·445 by the difference between 477·34 and 500.
3. At what rate per cent. will a sum of money treble itself in 53⅓ years at simple interest?
4. A bankrupt's debts are £2,373 6s. 8d., and £674 18s. 4d. is divided among the creditors. How much is lost in the £?

Card 23.

1. Find the value of 18·7916 florins + 12·65 crowns − 27·483 half-crowns.
2. A man left ⅛ of his property to each of his two sons, $\frac{1}{15}$ to each of his three daughters, and the remainder, which was £2,030, to his wife. Find the value of the whole property.
3. A measure holding ·625 of a pint is filled 90 times from a barrel containing 36 gallons. What quantity is left?
4. What is the interest on 30 guineas for 7½ years at 3⅓ per cent.?

Card 24.

1. If ⅘ of a ship is worth £1,232, what is the value of ·81 of it?
2. A can do a piece of work in 5 days, B can do it in 7 days, and A, B, and C can do it together in 2 days. How long would it take C alone to do it?
3. Add 11 fifths, 15 sevenths, 19 ninths, and 23 elevenths.
4. A cask was ⅔ full, and after 4½ gallons had been added it was ¾ full. How much will the cask hold?

Card 25.

1. What principal must be put out to interest to amount to £1,212 9s. in 4½ years at 4 per cent.?

2. What is the value of $\frac{£14{\cdot}95125}{{\cdot}0375}$?

3. A sum of money was divided among A, B, and C. A received $\frac{3}{5}$ of it, B received $\frac{3}{4}$ of A's share, and C received £7 10s. What was the sum?

4. Give the difference in lbs. between ·03125 of a ton and ·16 of 3 qrs. 3 lbs.

Card 26.

1. What decimal of £2 17s. 6d. is ·184 of 15s.?

2. In a town of 32,000 electors ·45 voted for one candidate, ·258 for another, and ·096 for a third; how many did not vote at all?

3. If a room 6 yards long takes 30 yards of carpet a yard wide, how many yards will it take when the carpet is 27 inches wide?

4. In what time will £780 gain £140 8s. at 6 per cent.?

Card 27.

1. If $\frac{5}{12}$ of an estate is worth £1,487 10s., what is the value of a quarter of an estate a quarter as large?

2. By how much is ·3798 nearer to ·379785 than ·37975?

3. Divide $\frac{3}{5}$ of £1·875 by ·5.

4. After spending $\frac{3}{7}$ of $\frac{4}{5}$ of my money I had 11s. 6d. left. How much had I at first?

Card 28.

1. What is the amount of £830 5s. for 2 years 8 months at 3½ per cent.?

2. Express ·27̇ of a guinea + ·027̇ of half-a-guinea as the decimal of half-a-sovereign.

3. Find the continued product of 3·039, ·03039, and ·0003039.

4. If 30 men earn £54·5625 in 4 days, how much will 51 men earn in the same time?

Card 29.

1. A bankrupt owes £7,035 11s., and can pay only £2,931 9s. 7d. How much will a creditor of £950 lose?

2. I spent £9·74875 and £6 18s. 8d., and have $\frac{4}{9}$ of my money left. How much had I at first?

3. In what time will £390 double itself at 3½ per cent., simple interest?

4. What decimal of 1 ac. 20 sq. po. is $\frac{3}{7}$ of 1 ro. 28 sq. po.?

Card 30.

1. If a train travels at the rate of 37½ miles an hour, how long will it take to travel 5¾ miles?

2. Find the value of ·45 of £1·375 ÷ ·2 of 2·0625.

3. If A can dig a ditch in 3½ days, and B can do it in 4½ days, how long would it take them working together?

4. At what rate per cent. will £760 amount to £846 9s. in 3½ years?

Card 31.

1. Find the 4th proportional to the numbers 1·5, 1·875, and 20.

2. Add together the sum, difference, and product of ·058 and ·74.

3. Find the value in lbs. of ·3825 of $\frac{3}{14}$ of 11 tons 12 cwt.

4. Multiply £33 6s. 6½d. by $4\frac{5}{34}$.

Card 32.

1. What is the interest on £7,405 16s. 8d. for 3½ years at 5½ per cent.?

2. If £5 12s. 6d. be paid for mowing 22½ acres, what should be paid for mowing 119 ac. 1½ ro.?

3. Divide £8,647·275 by 72, and give the answer in £ s. d.

4. What vulgar fraction is equal to ·64583̇ − ·409̇?

Card 33.

1. How much greater is $\frac{3}{7}$ of $2\frac{1}{10}$ of 2s. 3½d. than ·27̇ of ·153 of 5s. 2½d.?

2. A and B can do a piece of work in 3¾ days, and B alone can do it in 6⅔ days. How long will it take A alone to do it?

3. If 4 lbs. of coffee cost as much as 18 lbs. of sugar, and sugar is £27 10s. per ton, what will a cwt. of coffee cost?

4. What is the difference in square yards between ·125 of ·125 of an acre and ·35 of ·0625 of 1½ acres?

Card 34.

1. If I work 7½ days for $£2\frac{13}{16}$, how long should I work for £15¾?

2. Subtract ·0025 of a sovereign from ·00375 of a guinea, and express the difference as the fraction of a penny.

3. Divide ·05 by ·0005, and take 90·909 from the quotient.

4. What principal will obtain £99 18s. interest in 3 years at 2¼ per cent.?

Card 35.

1. Find the product of the sum and difference of $1\frac{7}{12}$ and $1\frac{3}{5}$.

2. If ·36̇ of a yard of wire weigh ·083̇ lb., what will be the weight of 1½ miles of similar wire?

3. If £477 8s. be divided among 12 men and 28 women, and each woman receive four times as much as a man, what is a man's share?

4. Reduce £12 8s. 0¾d. to the decimal of 15¾ guineas.

Card 36.

1. If £940 be lent for 2¾ years at 4¼ per cent., what sum will be returned at the end of that time?

2. From 1·325 of a crown take 1·2916 of 4s. 6d.

3. If a grocer buys 2 cwt. 1 st. of sugar at 2½ per lb., and sells £2 2s. 3½d. worth of it at the same price, what part of a ton has he left?

4. If 4 horses are worth 7 cows, and 5 cows are worth £65, what is the value of 17 horses?

Card 37.

1. What fraction divided by ⅘ will give the same result as the difference between $\frac{7}{12}$ and $\frac{5}{16}$?

2. If 7·3 lbs. cost 5·9583s., what will 5 stones cost?

3. How long must £530 be lent to produce £68 18s. interest at 3¼ per cent.?

4. Of the coins in a box ⅓ are crowns, ¼ are half-crowns, ⅕ are shillings, ⅙ are sixpences, and the rest are 36 pennies. How many coins are there in the box?

Card 38.

1. If 9 men earn £34 14s. 2d. in 17·5 days, how much will they earn in 5·75 days?

2. I spend $\frac{5}{9}$ of my income for food and rent. The rent is £18, and the cost for food is $\frac{22}{45}$ of my income. What is my income?

3. What decimal of £23 5s. is $\frac{7}{8}$ of $\frac{20}{43}$ of £2 14s. 3d.?

4. Find the simple interest on £11,573 15s. for 3½ years at 4⅜ per cent.

A Prize of HALF-A-GUINEA will be paid to the Teacher who

Card 39.

1. Find the value of ·06875 of a crown + 1·5875 of 8s. 4d. + ·04625 of £1 5s.

2. What sum will amount to £182 18s. in 6 years at 4 per cent.?

3. If ·1$\dot{7}$ of a ton cost £1 7s. 6d., what will 9·8$\dot{5}\dot{7}$ cwt. cost?

4. From a cistern $\frac{5}{6}$ full 20 gallons are drawn; 10 gallons are then added, and it is found to be half full. How much does the cistern hold?

Card 40.

1. What fraction with 24 as denominator is equal to $\frac{9\frac{1}{6}}{11}$?

2. I bought $1\frac{3}{4}$ yards of silk for 11s. 1d. How much should I have to pay for $9\frac{7}{8}$ yards?

3. A gentleman after paying a tax of 7d. in the pound on his income, and another tax of 3d. in the pound on his income, had £3,423 3s. 4d. left. What was his income?

4. If £123 6s. is paid for the loan of £685 for 6 years, what is the rate of interest?

ANSWERS.

Card 1.
1. $\frac{33}{40}$.
2. £3 11s. 5½d.
3. 6·95875.
4. 1 hour 27½ minutes.

Card 2.
1. $2\frac{6}{11}$ days.
2. 5½ miles.
3. £234 0s. 9d.
4. 43·516.

Card 3.
1. £1 11s. 6d.
2. £2 14s. 1d.
3. £23 16s.
4. £20 18s. 6d.

Card 4.
1. $\frac{333}{440}$.
2. ·28515625.
3. 9 months.
4. 19 cwt.

Card 5.
1. 30 minutes.
2. 62 weeks.
3. £7,400.
4. $\frac{51}{72}$.

Card 6.
1. 4½ per cent.
2. 7s. 3d.
3. 216 books.
4. 29·678125 tons.

Card 7.
1. £1,770.
2. 6 sq. ft. 36 sq. in.
3. £6,550.
4. £1,260.

Card 8.
1. ·0078125.
2. £11 17s. 5d.
3. £1,658 11s. 2¼d.
4. 36·879.

Card 9.
1. ·000038832712$\dot{1}$.
2. 3s. 10d.
3. $2\frac{14}{15}$ days.
4. 3⅓ per cent.

Card 10.
1. 3s., 6s., and 12s.
2. £10 13s. 4½d.
3. 387,000 men.
4. $\frac{9}{10}$.

Card 11.
1. £7,312 10s.
2. 4s. 2d.
3. £2 4s. 4d.
4. 53·824 and 46·176.

Card 12.
1. 212½ minutes.
2. 7 years.
3. 15¾ hours.
4. 500.

Card 13.
1. 1,645 lamps.
2. £1,840.
3. 195 sovereigns.
4. ·19375.

Card 14.
1. $\frac{3}{8103}$.
2. £7 9s. 5¾d.
3. £1,875.
4. 24 days.

Card 15.
1. 7½ days.
2. 4 per cent.
3. ·369.
4. 4 months.

Card 16.
1. £2,974 12s.
2. 13 ft. 1½ in.
3. £753.
4. 3s. 9d.

Card 17.
1. $\frac{1}{65}$.
2. £1,750.
3. 22½ minutes.
4. 17 times.

Card 18.
1. 4·6$\dot{}$.
2. 1 hour 20 minutes.
3. 1½ years.
4. £560.

Card 19.
1. £115 10s.
2. 10 per cent.
3. 71·259.
4. 9s. 2¼d.

Card 20.
1. 96 horses.
2. ·0006.
3. £13 13s.
4. £1,068 16s. 9¾d.

Card 21.
1. 360 marbles.
2. ·49$\dot{7}$.
3. 1 ton 3 cwt. 2 qrs. 8 lbs.
4. £255.

Card 22.
1. 3·1.
2. ·086625.
3. 3¾ per cent.
4. 14s. 3¾d.

Card 23.
1. £1 12s. 1½d.
2. £4,350.
3. 28 gals. 3 qts. 1¾ pts.
4. £7 17s. 6d.

Card 24.
1. £1,764.
2. $6\frac{5}{11}$ days.
3. $8\frac{4}{4\,8\,8\,8}$.
4. 54 gallons.

Card 25.
1. £1,027 10s.
2. £398 14s.
3. £25.
4. 55½ lbs.

Card 26.
1. ·048.
2. 6,272.
3. 40 yards.
4. 3 years.

Card 27.
1. £223 2s. 6d.
2. ·00002.
3. £1 5s. 3¾d.
4. 17s. 6d.

Card 28.
1. £904 1s.
2. ·6125.
3. ·000028066748319.
4. £92 15s. 1½d.

Card 29.
1. £554 3⅓ 4d.
2. £30 0s. 4½d.
3. $28\frac{4}{7}$ years.
4. ·25.

Card 30.
1. 9 minutes 12 seconds.
2. £1 7s.
3. $1\frac{8}{13}$ days.
4. 3¼ per cent.

Card 31.
1. 25.
2. 1·52292.
3. $2{,}129\frac{12}{13}$ lbs.
4. £142 2s. 7½d.

Card 32.
1. £1,425 12s. 5½d.
2. £29 16s. 10½d.
3. £120 2s. 0½d.
4. $\frac{143}{616}$.

Card 33.
1. 1s. $1\frac{3}{14}$d.
2. 8¼ days.
3. £6 3s. 9d.
4. $83\frac{3}{16}$ sq. yards.

Card 34.
1. 42 days.
2. $\frac{0.2}{100}$d.
3. 9·091.
4. £1,480.

Card 35.
1. $\frac{131}{2400}$.
2. 5 cwt. 1 qr. 17 lbs.
3. £3 17s.
4. ·75.

Card 36.
1. £1,049 17s. 3d.
2. 9¾d.
3. $\frac{1}{63}$ ton.
4. £386 15s.

Card 37.
1. $\frac{13}{44}$.
2. £2 16s. 10½d.
3. 4 years.
4. 720 coins.

Card 38.
1. £11 8s. 1d.
2. £279.
3. ·0416.
4. £1,957 17s. 10½d.

Card 39.
1. 6s. 9½d.
2. £147 10s.
3. £3 12s. 4½d.
4. 30 gallons.

Card 40.
1. $\frac{32}{33}$.
2. £3 2s. 6½d.
3. £3,572.
4. 3 per cent.

N.B.—No teacher can win more than one prize in six months.

Teacher who is the FIRST to point out an Error in the above Answers.